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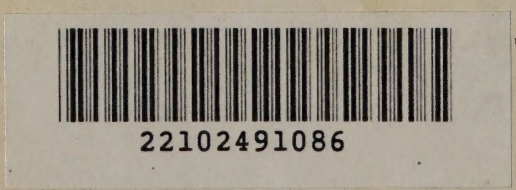
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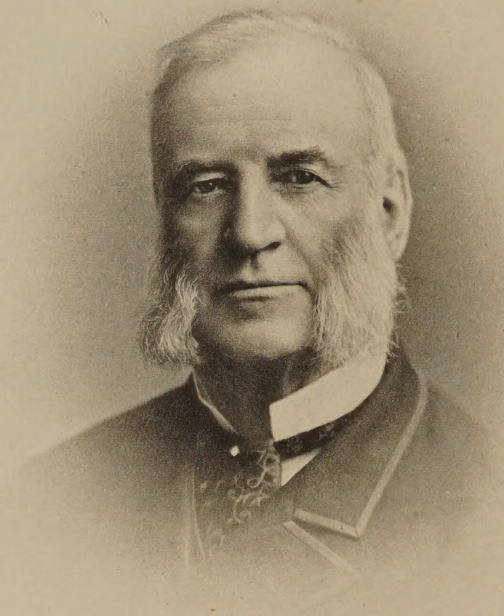

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FOR THE YEAR 1886.

VOLUME III.

EDITED FOR THE ASSOCIATION

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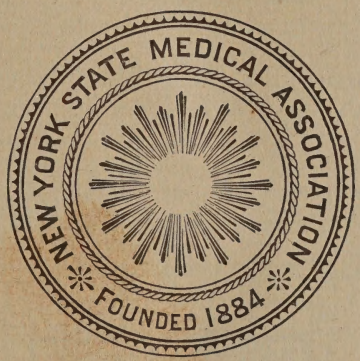

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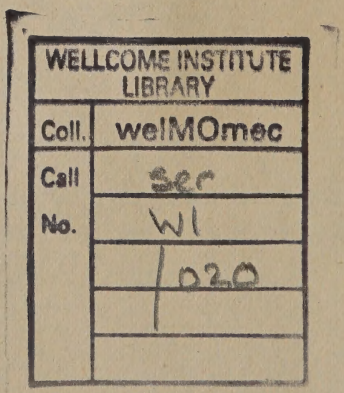


MEDICAL Library ASSOCIATION

CONTENTS.

PAGE

Officers and Council for 1885–'86 1
Committee of Arrangements for 1885–'86 3
Officers and Council for 1886–'87 4
Officers of the Branch Associations 6
List of Fellows in Attendance at the Third Annual Meeting . . . 9
Delegates from other Medical Organizations and Invited Guests . . 14
Address of Welcome and Report of the Committee of Arrangements. By J. W. S. Gouley, M. D., of New York County 15
The President's Annual Address—Subluxation of the Radius from Extension in Young Children. By E. M. Moore, M. D., of Monroe County 18
Some Observations on the Use of the Mineral Waters of Saratoga. By R. C. McEwen, M. D., of Saratoga County. 33
Recovery *versus* Cure. By Alfred L. Carroll, M. D., of Richmond County 41
Is Erysipelas ever a strictly Local Disease?—if not, what should be its Rational Treatment? By Frederick Hyde, M. D., of Cortland County 49
A Peculiar Foreign Body in the Stomach.—Concretions of Hair, Thread, etc. By W. Finder, M. D., of Rensselaer County . . 64
Report of Two Cases of Morphia and Cocaine Habit. By Judson B. Andrews, M. D., of Erie County 68
Medicine and Pharmacy Abroad. By Edward R. Squibb, M. D., of Kings County 78
The Relations of Physicians to their Medical Supplies. By Edward R. Squibb, M. D., of Kings County 84
Discussion on Shot Wounds of the Intestines. Introductory Remarks. By W. S. Tremaine, M. D., of Erie County 93
Question 1. What are the Diagnostic Signs of the Involvement of the Intestines in Shot Wounds of the Abdomen? By Joseph D. Bryant, M. D., of New York County 105
Question 2. What should be the First Measures of Treatment in Shot Wounds of the Abdomen involving the Intestines? By E. M. Moore, Jr., M. D., of Monroe County 112

PAGE

Question 3. Under what circumstances, and how soon after the Injury, should Laparotomy be resorted to in cases of Shot Wounds of the Intestines, and when is the operation contra-indicated? By Wm. T. Bull, M. D., of New York County; Theodore R. Varick, M. D., of New Jersey; Charles B. Nancrede, M. D., of Pennsylvania 117

Question 4. What are the Essential Features of the Technique of Laparotomy, including the Management of the Wounded Intestine? By Frederic S. Dennis, M. D., of New York County; John B. Hamilton, M. D., of Washington, D. C. 138

Question 5. What are the best methods of After-Treatment in cases of Shot Wounds requiring Laparotomy and Suture of the Intestines? By Charles B. Nancrede, M. D., of Pennsylvania; Chas. T. Parkes, M. D., of Chicago 154

Address on Medical Jurisprudence. By Simeon Tucker Clark, M. D., of Niagara County 172

Dislocations of the Ankle. By C. W. Brown, M. D., of Chemung County 188

Commercial Prescriptions. By H. C. Van Zandt, M. D., of Schenectady County 202

A Modification of Politzer's Air-Bag. By H. E. Mitchell, M. D., of Rensselaer County 207

Intestinal Obstructions, with Reports of Cases. By B. L. Hovey, M. D., of Monroe County 209

A Naso-Pharyngeal Tumor of large size. Remarks upon the Pathology of these growths and their Removal after Preliminary Resection of the Superior Maxilla. By Nathan Jacobson, M. D., of Onondaga County 218

On Nephrectomy. By E. D. Ferguson, M. D., of Rensselaer County 234

A Plea for the use of Sims's Speculum by the General Practitioner. By Wm. H. Robb, M. D., of Montgomery County 238

Congenital Occlusion of the Posterior Nares. By Alvin A. Hubbell, M. D., of Erie County 244

Discussion on Pulmonary Tuberculosis. Introductory Remarks. By Henry D. Didama, M. D., of Onondaga County 257

Question 1. In addition to a Feeble Vitality, which may be derived from Parents who are or are not Consumptive, do the Children of Consumptive Parents inherit Tuberculosis itself, or any Special Phthisical Taint or Tendency? *Question* 2. What are the chief Habits, Peculiarities, and Diseases—other than Consumption—which impair the Constitution transmitted to Children, and facilitate Tubercular Infection? By John Cronyn, M. D., of Erie County 270

PAGE

Question 3. Through what Avenues do the Bacilli of Tubercle find Lodgment in the Lungs? *Question* 4. What does Observation prove regarding the Likelihood of Bacillary Infection when there is no Constitutional Enfeeblement, either Inherited or Acquired? By Hermann M. Biggs, M. D., of New York County 273

Question 5. What are the Principal Surroundings, Climate, Occupations, Habits, and Diseases which impair Cellular Resistance, and so favor Infection and Development of Consumption? *Question* 6. Is the Presence of Tubercle Bacilli in the Sputa an indication that the existing Lung Disease was originally Tuberculosis; and is their Absence proof that the Disease is not Consumption? By Henry L. Elsner, M. D., of Onondaga County 280

Question 7. What Precautions should be taken, and when, to Prevent the Invasion of Tubercle Bacilli; and what Measures should be employed to Fortify Enfeebled Cells against their Attacks? *Question* 8. How can the Medical Profession most widely diffuse and inculcate the important truth that Consumption in Children is often the Result of Parental Faults and Vices? By Wm. H. Flint, M. D., of New York County 292

Question 9. What Therapeutical Benefit has been derived from the Discovery of the Bacillus Tuberculosis? *Question* 10. What Mode of Treatment promises most effectually to Prevent or Arrest Tuberculosis, and promote the Repair of Lesions? By John Shrady, M. D., of New York County 298

The Proper Attitude of Therapeutics. By Charles G. Stockton, M. D., of Erie County 309

Fracture of the Neck. By R. B. Bontecou, M. D., of Rensselaer County 317

A Short Review of the Fever Epidemic in Kingston, Ulster County, during the Winter of 1884–'85. By H. Van Hoevenberg, M. D., of Ulster County 320

Peculiarities in a Case of Ovariotomy. By John G. Orton, M. D., of Broome County 324

A Remarkable Case of obscure Toxæmia. By J. C. Hannan, M. D., of Rensselaer County 328

Sacculation and Perforation of the Bladder as Consequences of Chronic Retention of Urine. By J. W. S. Gouley, M. D., of New York County 340

Discussion on Eclampsia. Introductory Remarks. By Wm. T. Lusk, M. D., of New York County 354

Question 1. Does Eclampsia ever occur without Renal Complications, and what is the connection between Uræmia and the Eclamptic Attack? By James Tyson, M. D., of Pennsylvania 364

PAGE

Question 2. Should Labor be induced in case of the occurrence of Eclampsia during Pregnancy; and under what circumstances, in case of threatened Eclampsia, should Premature Labor be induced as a Prophylactic Measure? By Isaac E. Taylor, M. D., of New York County; T. Gaillard Thomas, M. D., of New York County 370

Question 3. What are the most reliable Therapeutic Agents for the Control of the Convulsions of Pregnancy, Labor, and Child-Bed; and should Bleeding be employed in Eclampsia? By George T. Harrison, M. D., of New York County; Darwin Colvin, M. D., of Wayne County 387

Question 4 In what proportion do the Insane in Public Asylums owe their Insanity to Puerperal Convulsions? By James R. MacGregor, M. D., of New York County; G. Alder Blumer, M. D., of Oneida County 399

Proceedings: Third Annual Meeting of the New York State Medical Association 426

Reports of the District Branches 434

Report of the New York County Medical Association 457

Memorial of Austin Flint, M. D., LL. D. 462

Annual Report of the Council, and Minutes of the Sessions of the Council 502

Report of the Library Committee 508

Eulogy on Frank Hastings Hamilton, M. D., LL. D. 509

Memoir of Frank Hastings Hamilton, M. D., LL. D. 523

Memoir of John Perdue Gray, M. D., LL. D. 526

Memoir of Isaac Purdy, M. D. 530

Memoir of Desault Guernsey, M. D. 532

Memoir of Isaac Griffin Collins, M. D. 537

Memoir of Patrick Henry Flood, M. D. 539

Memoir of Gaspar Griswold, M. D. 541

Memoir of John H. Knapp, M. D. 542

Deceased Fellows 544

Constitution and By-Laws 545

List of Fellows by District and County 560

Alphabetical List of Fellows 580

Index 597

OFFICERS AND COUNCIL FOR 1885–'86.

PRESIDENT.

E. M. MOORE, M. D., Rochester, Monroe County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, WILLIAM GILLIS, M. D., Franklin County.
SECOND DISTRICT, H. C. VAN ZANDT, M. D., Schenectady County.
THIRD DISTRICT, FREDERICK HYDE, M. D., Cortland County.
FIFTH DISTRICT, J. G. PORTEOUS, M. D., Dutchess County.

RECORDING SECRETARY.

CALEB GREEN, M. D., Homer, Cortland County.

CORRESPONDING AND STATISTICAL SECRETARY.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

TREASURER.

JOHN H. HINTON, M. D., 41 West Thirty-Second St., New York City.

MEMBER OF THE COUNCIL AT LARGE.

JOHN SHRADY, M. D., New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, E. M. LYON, M. D.,
Clinton County; Term expires 1886.
" " IRA H. ABELL, M. D.,
Jefferson County; term expires 1887.
SECOND DISTRICT, ROBERT C. McEWEN, M. D.,
Saratoga County; term expires 1886.
" " THOMAS WILSON, M. D.,
Columbia County; term expires 1887.
THIRD DISTRICT, GEORGE W. AVERY, M. D.,
Chenango County; term expires 1886.
" " F. W. ROSS, M. D.,
Chemung County; term expires 1887.

FOURTH DISTRICT, DARWIN COLVIN, M. D.,
Wayne County; term expires 1886.
" " SIMEON T. CLARK, M. D.,
Niagara County; term expires 1887.
FIFTH DISTRICT, J. W. S. GOULEY, M. D.,
New York County; term expires 1886.
" " E. S. F. ARNOLD, M. D.,
New York County; term expires 1887.

COMMITTEE OF ARRANGEMENTS FOR 1885–'86.

E. M. MOORE, President,
CALEB GREEN, Recording Secretary,
E. D. FERGUSON, Corresponding Secretary,
Ex-officio members of the committee.

JOHN W. S. GOULEY, Chairman.
GLOVER C. ARNOLD, Secretary.

EDMUND S. F. ARNOLD,
GEORGE W. BAKER,
C. ELLERY DENISON,
JOHN H. HINTON,
JOSEPH C. HUTCHINSON,
CHARLES A. LEALE,
S. B. WYLIE McLEOD,
JOHN G. PORTEOUS,
A. D. RUGGLES,
JOHN D. RUSHMORE,
JOHN SHRADY,
WILLIAM HENRY THAYER,
JOSEPH G. WALLACH.

OFFICERS AND COUNCIL FOR 1886–'87.

The Fourth Annual Meeting of the Association will be held in New York City, beginning September 27, 1887.

PRESIDENT.

ISAAC E. TAYLOR, M. D., 7 E. 36th St., New York City, Fifth Dist.

VICE-PRESIDENTS.

FIRST DISTRICT, JOHN P. SHARER, M. D., Herkimer County.
SECOND DISTRICT, L. C. DODGE, M. D., Clinton County.
THIRD DISTRICT, GEORGE W. AVERY, M. D., Chenango County.
FOURTH DISTRICT, DARWIN COLVIN, M. D., Wayne County.

SECRETARY.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

TREASURER.

J. H. HINTON, M. D., 41 W. 32d St., New York City.

DIRECTOR OF THE LIBRARY.

J. W. S. GOULEY, M. D., 324 Madison Avenue, New York City.

MEMBER OF THE COUNCIL AT LARGE.

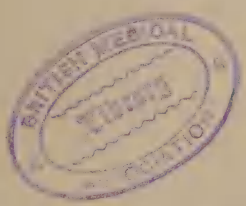
CHARLES A. LEALE, M. D., New York County.

ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, HENRY N. PORTER, M. D.,
Oneida County; term expires 1888.
" " IRA H. ABELL, M. D.,
Jefferson County; term expires 1887.
SECOND DISTRICT, R. C. McEWEN, M. D.,
Saratoga County; term expires 1888.
" " THOMAS WILSON, M. D.,
Columbia County; term expires 1887.

THIRD DISTRICT, WILLIAM FITCH, M. D.,
Tompkins County; term expires 1888.
" " F. W. ROSS, M. D.,
Chemung County; term expires 1887.
FOURTH DISTRICT, JOHN S. JAMISON, M. D.,
Steuben County; term expires 1888.
" " S. T. CLARK, M. D.,
Niagara County; term expires 1887.
FIFTH DISTRICT, A. L. CARROLL, M. D.,
Richmond County; term expires 1888.
" " GLOVER C. ARNOLD, M. D.,*
New York City; term expires 1887.

* Elected by the Council, Nov. 18, 1886, to fill the vacancy caused by the resignation of Dr. E. S. F. Arnold, who had removed from the state.



OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1887.

FIRST OR NORTHERN BRANCH.

The Third Annual Meeting will be held at Utica, Oneida County, on the second Tuesday in July, 1887.

OFFICERS.

PRESIDENT, JOHN P. SHARER, M. D., Little Falls, Herkimer County.
SECRETARY, WILBUR H. BOOTH, M. D., Utica, Oneida County.

EXECUTIVE COMMITTEE.

WILLIAM GILLIS, M. D., Fort Covington, Franklin County.
ISAAC DE ZOUCHE, M. D., Gloversville, Fulton county.
THOMAS McGANN, M. D., Wells, Hamilton County.
JOHN P. SHARER, M. D., Little Falls, Herkimer County.
IRA H. ABELL, M. D., Antwerp, Jefferson County.
ALBERT A. JOSLIN, M. D., Greig, Lewis County.
H. M. LEACH, M. D., Glen, Montgomery County.
G. ALDER BLUMER, M. D., Utica, Oneida County.
BYRON DE WITT, M. D., Oswego, Oswego County.
GUY REUBEN COOK, M. D., Louisville, St. Lawrence County.

SECOND OR EASTERN BRANCH.

The Third Annual Meeting will be held at Schenectady, Schenectady County, on the fourth Tuesday in June, 1887.

OFFICERS.

PRESIDENT, L. C. DODGE, M. D., Rouse's Point, Clinton County.
SECRETARY, C. H. BURBECK, M. D., Troy, Rensselaer County.

EXECUTIVE COMMITTEE.

S. PETERS, M. D., Cohoes, Albany County.
L. C. DODGE, M. D., Rouse's Point, Clinton County.
THOMAS WILSON, M. D., Claverack, Columbia County.
E. F. EDGERLY, M. D., Moriah Centre, Essex County.
ROBERT SELDEN, M. D., Catskill, Greene County.

Z. ROUSSEAU, M. D., Troy, Rensselaer County.
R. C. McEWEN, M. D., Saratoga Springs, Saratoga County.
J. R. REAGLES, M. D., Schenectady, Schenectady County.
H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
JAMES FERGUSON, M. D., Glens Falls, Warren County.
F. J. HINDS, M. D., Salem, Washington County.

THIRD OR CENTRAL BRANCH.

The Third Annual Meeting will be held at Elmira, Chemung County, on the third Tuesday in June, 1887.

OFFICERS.

PRESIDENT, GEORGE W. AVERY, M. D., Norwich, Chenango County.
SECRETARY, CHARLES W. BROWN, M. D., Elmira, Chemung County.

EXECUTIVE COMMITTEE.

S. P. ALLEN, M. D., Whitney's Point, Broome County.
C. F. MACDONALD, M. D., Auburn, Cayuga County.
F. W. ROSS, M. D., Elmira, Chemung County.
H. C. LYMAN, M. D., Sherburne, Chenango County.
CALEB GREEN, M. D., Homer, Cortland County.
O. W. BURHYTE, M. D., Brookfield, Madison County.
ROBERT ABERDEIN, M. D., Syracuse, Onondaga County.
LYMAN H. HILLS, M. D., Cooperstown, Otsego County.
WILLIAM FITCH, M. D., Dryden, Tompkins County.
W. L. AYER, M. D., Owego, Tioga County.
ELIAS LESTER, M. D., Seneca Falls, Seneca County.
W. P. BRODERICK, M. D., Havana, Schuyler County.
GEORGE C. SMITH, M. D., Delhi, Delaware County.

FOURTH OR WESTERN BRANCH.

The Third Annual Meeting will be held at Rochester, Monroe County, on the second Tuesday in May, 1887.

OFFICERS.

PRESIDENT, DARWIN COLVIN, M. D., Clyde, Wayne County.
SECRETARY, WILLIAM H. THORNTON, M. D., 574 Niagara Street, Buffalo, Erie County.

EXECUTIVE COMMITTEE.

JAMES A. STEPHENSON, M. D., Scio, Allegany County.
HARMON J. DEAN, M. D., Brocton, Chautauqua County.
J. B. ANDREWS, M. D., Buffalo, Erie County.

C. H. WOODWARD, M. D., Batavia, Genesee County.
B. T. KNEELAND, M. D., Dalton, Livingston County.
Monroe County.
W. Q. HUGGINS, M. D., Sanborn, Niagara County.
J. T. SMITH, M. D., Canandaigua, Ontario County.
WILLIAM C. BAILEY, M. D., Albion, Orleans County.
JOHN S. JAMISON, M. D., Hornellsville, Steuben County.
C. G. POMEROY, M. D., Newark, Wayne County.
Z. J. LUSK, M. D., Warsaw, Wyoming County.
DAVID M. SMITH, M. D., Penn Yan, Yates County.

FIFTH OR SOUTHERN BRANCH.

The Third Annual Meeting will be held in Brooklyn, Kings County, on the fourth Tuesday in May, 1887.

OFFICERS.

PRESIDENT, ISAAC E. TAYLOR, M. D., New York, New York County.
SECRETARY, E. H. SQUIBB, M. D., Brooklyn, Kings County.

EXECUTIVE COMMITTEE.

JOHN YOUNG, M. D., Fishkill-on-Hudson, Dutchess County.
WILLIAM McCOLLOM, M. D., Brooklyn, Kings County.
P. BRYNBERG PORTER, M. D., New York, New York County.
WILLIAM B. EAGER, M. D., Middletown, Orange County.
WILLIAM YOUNG, M. D., Cold Spring, Putnam County.
EDWIN WEBB, M. D., Hempstead, Queens County.
F. U. JOHNSTON, M. D., New Brighton, Richmond County.
WILLIAM GOVAN, M. D., Stony Point, Rockland County.
W. D. WOODEND, M. D., Huntington, Suffolk County.
THOMAS W. BENNETT, M. D., Jeffersonville, Sullivan County.
H. VAN HOEVENBERG, M. D., Kingston, Ulster County.
N. C. HUSTED, M. D., Tarrytown, Westchester County.

LIST OF FELLOWS IN ATTENDANCE AT THE THIRD ANNUAL MEETING IN NEW YORK CITY,

Held November 16, 17, and 18, 1886.

FIRST DISTRICT.

FRANKLIN COUNTY.

Gillis, William, Fort Covington.

FULTON COUNTY.

DeZouche, Isaac, Gloversville.

HERKIMER COUNTY.

Glidden, Charles H., Little Falls. Sharer, John P., Little Falls.
Green, H. H., Paine's Hollow.

JEFFERSON COUNTY.

Johnson, Parley H., Adams.

MONTGOMERY COUNTY.

French, S. H., Amsterdam. Robb, William H., Amsterdam.

ONEIDA COUNTY.

Porter, H. N., New York Mills.

SECOND DISTRICT.

ALBANY COUNTY.

Bailey, Theodore P., Albany. Sabin, William B., West Troy.
Lyon, George E., West Troy.

CLINTON COUNTY.

Dodge, Lyndhurst C., Rouse's Point. Lyon, E. M., Plattsburgh.

COLUMBIA COUNTY.

Wilson, Thomas, Claverack.

ESSEX COUNTY.

Sawyer, Conant, Au Sable Forks.

GREEN COUNTY.

Selden, Robert, Catskill.

RENSSELAER COUNTY.

Bontecou, R. B., Troy.
Burbeck, C. H., Troy.
Burton, Matthew H., Troy.
Crombie, Walter C., Schaghticoke.
Ferguson, E. D., Troy.
Finder, William, Jr., Troy.
Hannan, J. C., Hoosick Falls.
Harvie, John B., Troy.
Lester, S. W., Troy.
McTammany, William, Troy.
Mitchell, H. E., Troy.

SARATOGA COUNTY.

Babcock, M. N., Saratoga Springs.
Grant, Charles S., Saratoga Springs.
Keefer, Charles W., Mechanicsville.
McEwen, R. C., Saratoga Springs.
Reynolds, T. B., Saratoga Springs.

SCHENECTADY COUNTY.

McDonald, George E., Schenectady.
Reagles, James, Schenectady.
Van Zandt, H. C., Schenectady.

WARREN COUNTY.

Ferguson, James, Glens Falls.
Fitz Gerald, D. J., Glens Falls.
Martine, G. R., Glens Falls.

THIRD DISTRICT.

BROOME COUNTY.

Orton, John G., Binghamton.

CHEMUNG COUNTY.

Brown, Charles W., Elmira.
Wales, Theron A., Elmira.

CHENANGO COUNTY.

Avery, George W., Norwich.
Lyman, Henry C., Sherburne.

CORTLAND COUNTY.

Clark, D. C., Marathon.
Green, Caleb, Homer.
Hyde, Frederick, Cortland.
Jewett, H. O., Cortland.

DELAWARE COUNTY.

Allaben, O. M., Margaretville.
Morrow, William B., Walton.

MADISON COUNTY.

Cavana, Martin, Oneida.

ONONDAGA COUNTY.

Didama, Emory A., Syracuse.
Didama, Henry Darwin, Syracuse.
Donohue, F. O., Syracuse.
Elsner, Henry L., Syracuse.
Hatch, C. A. Syracuse.
Jacobson, Nathan, Syracuse.
Stephenson, F. H., Syracuse.

SENECA COUNTY.

Schoonmaker, E. J., Magee's Corners. Seaman, Frank G., Seneca Falls.

TOMPKINS COUNTY.

Fitch, William, Dryden.

FOURTH DISTRICT.

CATTARAUGUS COUNTY.

Tompkins, O. A., East Randolph.

CHAUTAUQUA COUNTY.

Chace, William, Mayville.

ERIE COUNTY.

Andrews, J. B., Buffalo.
Briggs, A. H., Buffalo.
Cronyn, John, Buffalo.
Fell, George E., Buffalo.
Heath, W. H., Buffalo.
Hubbell, Alvin A., Buffalo.
Johnson, Thomas M., Buffalo.
Murray, William D., Tonawanda.
Stockton, Charles G., Buffalo.
Thornton, William H., Buffalo.
Tremaine, W. S., Buffalo.

GENESEE COUNTY.

Jackson, A. P., Oakfield. Townsend, Morris W., Bergen.

LIVINGSTON COUNTY.

Jones, George H., Fowlerville.

MONROE COUNTY.

Hovey, B. L., Rochester. Moore, E. M. Rochester.

NIAGARA COUNTY.

Clark, Simeon Tucker, Lockport.

ONTARIO COUNTY.

Vanderhoof, F. D., Phelps.

ORLEANS COUNTY.

Chapman, James, Medina. Taylor, John H., Holley.

STEUBEN COUNTY.

Ellison, M. D., Canisteo. Jamison, John S., Hornellsville.

WAYNE COUNTY.

Colvin, Darwin, Clyde. Ingraham, S., Palmyra.

WYOMING COUNTY.

Horton, David B., Red Creek.

FIFTH DISTRICT.

DUTCHESS COUNTY.

Barnes, Edwin, Pleasant Plains.
Porteous, J. G., Poughkeepsie.
Pultz, M. T., Stanfordville.
Van Wyck, R. C., Hopewell Junction.

KINGS COUNTY.

Baker, George W., Brooklyn.
Benton, S. H., Brooklyn.
Bierwith, Julius C., Brooklyn.
Gardiner, William F., Brooklyn.
Hutchison, J. C., Brooklyn.
Leighton, N. W., Brooklyn.
Lloyd, T. Mortimer, Brooklyn.
McClellan, C. R., Brooklyn.
McCollom, William, Brooklyn.
Minard, E. J. C., Brooklyn.
North, Nelson L., Brooklyn.
Russell, W. G., Brooklyn.
Segur, Avery, Brooklyn.
Squibb, E. H., Brooklyn.
Squibb, Edward R., Brooklyn.
Steinke, C. O. H., Brooklyn.
Sullivan, J. D., Brooklyn.
Thayer, William Henry, Brooklyn.
Wieber, George, Brooklyn.
Wyckoff, R. M., Brooklyn.

NEW YORK COUNTY.

Agramonte, E. V., New York.
Arnold, E. S. F., New York.
Arnold, Glover C., New York.
Bathgate, Jas., Tremont, New York.
Bell, A. N., New York.
Biggs, Hermann M., New York.
Bryant, Joseph D., New York.
Bull, William T., New York.
Conover, William S., New York.
Denison, C. Ellery, New York.
Denison, Ellery, New York.
Dudley, A. Palmer, New York.
Flint, Austin, New York.
Flint, William H., New York.
Furman, Guido, New York.
Garrish, John P., New York.
Gleitzmann, J. W., New York.
Gouley, J. W. S., New York.
Grauer, Frank, New York.
Harrison, Geo. Tucker, New York.
Hinton, John H., New York.
Hubbard, S. T., New York.
Janeway, Edward G., New York.
Leale, Charles A., New York.
Lusk, William T., New York.
Lynch, P. J., New York.
MacGregor, James R., New York.
Manley, Thomas H., New York.
Matthews, David, New York.
McIlroy, Samuel H., New York.
McLeod, S. B. W., New York.
McLochlin, James A., New York.
McNamara, Lawrence J., New York.
Meier, G. C. H., New York.
Miller, William T., New York.
Miranda, R. L., New York.
Murphy, John, New York.
Newman, Robert, New York.
Nicoll, Henry D., New York.
Porter, P. Brynberg, New York.
Purple, Samuel S., New York.
Ransom, H. B., New York.
Ruggles, A. D., New York.
Shrady, John, New York.
Smith, Stephen, New York.
Taylor, Isaac E., New York.
Thomas, T. Gaillard, New York.
Wallack, Joseph G., New York.
White, William T., New York.
Wood, C. S., New York.

ORANGE COUNTY.

Eager, W. B., Middletown.

PUTNAM COUNTY.

Murdock, G. W., Cold Spring. Young, William, Cold Spring.

RICHMOND COUNTY.

Carroll, Alfred L., New Brighton.

ROCKLAND COUNTY.

Govan, William, Stony Point.

SUFFOLK COUNTY.

Hamil, Edward H., Islip. Woodend, William D., Huntington.

ULSTER COUNTY.

Chambers, Jacob, Kingston. Van Hoevenberg, Henry, Kingston.

WESTCHESTER COUNTY.

Husted, N. C., Tarrytown. Wells, William L., New Rochelle.
Southworth, R. J., Yonkers.

SUMMARY, BY DISTRICTS, OF FELLOWS IN ATTENDANCE.

First district,	9
Second district,	30
Third district,	22
Fourth district,	27
Fifth district,	86
Total,	174

DELEGATES FROM OTHER MEDICAL ORGANISATIONS AND INVITED GUESTS IN ATTENDANCE.

Connecticut Medical Society.

W. G BROWNSON, M. D. (Fairfield Co. Med. Soc.), New Canaan.
A. T. DOUGLASS, M. D., New London.

Massachusetts Medical Society.

CH. L. HUBBELL, M. D., Williamstown.

Rhode Island Medical Society.

J. HOWARD MORGAN, M. D., Westerly.

Invited Guests.

F. W. BROWN, M. D., Athens, ... Pennsylvania.
H. A. CARRINGTON, M. D., New Haven, . . Connecticut.
JOHN B. HAMILTON, M. D., Surg. Gen. Mar. Hosp. Serv., Washington, D. C.
STEPHEN G. HUBBARD, M. D., New Haven, . Connecticut.
CH. B. NANCREDE, M. D., Philadelphia, . . Pennsylvania.
CH. D. PARKES, M. D., Chicago, ... Illinois.
GEORGE PECK, M. D., U. S. Navy, Elizabeth, . New Jersey.
JAMES TYSON, M. D., Philadelphia, . . . Pennsylvania.
THEODORE R. VARICK, M. D., Jersey City, . New Jersey.
M. C. WEDGEWOOD, M. D., Lewiston, ... Maine.

ADDRESS OF WELCOME AND REPORT OF THE COMMITTEE OF ARRANGEMENTS.

By J. W. S. Gouley, M. D., of New York County, Chairman of the Committee.

November 16, 1886.

Gentlemen:—The exercises of the Third Annual Meeting of the New York State Medical Association, to which the Fellows of this County bid you a most cordial welcome, begin this morning with a departure from the plan adopted for the two previous meetings, as shown by the programme which has been forwarded to the Fellows of the Association.

Your Committee has the honor to report that the affairs of the Association are in an excellent condition. This state of general prosperity seems to be due chiefly to the high character of the scientific work which has been performed by the Fellows ever since the organisation of the Association, and to the fact that nearly the whole time of the Association has been consumed in scientific labor. The marked increase in the number of the Fellows is also noteworthy. According to the Transactions for 1884, the Fellowship of the Association was 514, and for 1885 it was 629, showing an increase of 115 over the year 1884; and since the publication of the Transactions for 1885 there has been a further addition to the number of Fellows.

The scientific material to be offered at this meeting may be summarised as follows: There will be three addresses: one on surgery, by the President; one on forensic medicine, by Dr. S. T. Clark, of Niagara County; and one on therapeutics, by Dr. Charles G. Stockton, of Erie County. The great success of last year's discussion on pneumonia has led the President of the Association to propose three subjects for dis-

cussion at this meeting: one on surgery, one on medicine, and one on obstetrics. A Fellow has been appointed to open the discussion on each of these topics, and to prepare a paper in which he shall propound certain questions to be answered in writing by Fellows of the Association, delegates, and invited guests. After the formal answers to these questions have been made, general discussion will be in order. The subjects for discussion are, shot-wounds of the intestines, pulmonary tuberculosis, and eclampsia. In addition to the addresses and discussions, two demonstrations in pathology will be made, and twenty-one essays will be presented, and be open to debate during the morning and afternoon sessions and one night session, making, in all, fifty-five scientific contributions. These fifty-five contributions come from the five geographical districts of this State, and from sister States, in the following proportions:

The First District sends	1
Second "	7
Third "	7
Fourth "	11
Fifth "	23
District of Columbia sends	1
State of Illinois "	1
State of New Jersey "	1
State of Pennsylvania "	3
	55

In these five districts, Fellows of the Association from seventeen counties contribute essays in the following proportions:

Third	District,	Broome	County,	1
Third	"	Chemung	"	1
Third	"	Cortland	"	1
Fourth	"	Erie	"	6
Fifth	"	Kings	"	3
Fourth	"	Monroe	"	3

Second	District,	Montgomery	County,	1
Fourth	"	Niagara	"	1
Fifth	"	New York	"	18
First	"	Oneida	"	1
Third	"	Onondaga	"	4
Second	"	Rensselaer	"	4
Fifth	"	Richmond	"	1
Second	"	Saratoga	"	1
Second	"	Schenectady	"	1
Fifth	"	Ulster	"	1
Fourth	"	Wayne	"	1
				49

The contributions from the sister States are as follows:

District of Columbia,		1
State of Illinois,		1
"	New Jersey,	1
"	Pennsylvania,	3
		6

The fifty-five contributions, classified in accordance with their subject-matter, are as follows:

19 are on surgery.
18 " medicine.
10 " obstetrics and gynæcology.
5 " materia medica and therapeutics.
2 " pathology.
1 is on forensic medicine.

55

A part of each morning session will be devoted to the reading and discussion of essays, and the afternoon sessions will be opened at one o'clock, instead of two o'clock as formerly. The first hour of each afternoon session will be devoted to the presentation of papers, and afterwards the discussion of the questions named in the programme will be the special order of the afternoon session.

PRESIDENT'S ANNUAL ADDRESS—SUBLUXATION OF THE RADIUS FROM EXTENSION IN YOUNG CHILDREN.

By E. M. Moore, M. D., of Monroe County.

November 16, 1886.

Another year has brought us together for scientific advance and social enjoyment. The anxieties which exist when new and untried combinations are devised have all passed away, and our Association is one of the permanent organisations of medical science. To me, the establishment of a voluntary relation among its members is especially pleasing. During the year 1874, the Medical Society of the State of New York honored me by an appointment as its presiding officer, and, as you know, in that capacity I was called on for such recommendations as seemed proper for its advancement in scientific usefulness. My theme on this occasion was the injury sustained by our relation to the state government, which, by regulating our affairs by statute, subjected us to the control of the courts. This control was always malign, for, whenever they were appealed to with reference to our most sensitive point, that of the discipline of quacks, we were very likely to be beaten. In confirmation of this, I cited a case of a very flagrant character, which occurred in a county adjoining my own residence, where an itinerant quack, with his flaming advertisements, was reinstated, after an expensive trial, into full membership in the County Society.

My recommendation consisted in the advice to the State Society to cut itself off from all affiliation with the state government, and carry on its scientific inquiries through an independent voluntary association. I must confess I did not expect the end to be attained by a process so painful as it

has been; but the result, in respect to the object alluded to above, is highly gratifying. More than a decade has passed, and I am now still further honored by being the incumbent of your presidential office. It is therefore my duty to look over the field, and make such recommendations with reference to our organisation as may seem to me essential to its improvement. My work is soon accomplished, for I have none to make. The Association has been entirely successful, both in its annual and district meetings, in promoting the object of such convocations of scientific men. The whole may be summed up in this statement: The work is good, and the fellowship complete.

I have therefore chosen to turn directly to a scientific topic to occupy your attention during the hour allotted to me. Though not one of the gravest character, it has been but little understood, and has piqued my curiosity from the difficulty of learning anything concerning it from our authorities that I felt to be reliable. I thought my audience might have been annoyed in the same manner as I have been, and with as little result. Those whose minds had become satisfied on the matter would, I thought, tolerate a repetition if it corresponded with their own knowledge, and even if it did not.

The injury of which I propose a little discussion is one that has attracted but slight attention from surgeons until lately, probably in consequence of the mildness of the symptoms and the relief often obtained from accidental posture. I have reference to a peculiar luxation which occurs at the elbow in young children from the custom of lifting them by the arm, as in dragging them up-stairs, or swinging them over a puddle to keep them dry-shod. It is obvious that the line of force in producing these luxations is entirely different from that which causes the other displacements at the elbow, which result from falls upon the hand or the elbow itself; although the twisting by entanglement in machinery will also produce them. The attitude of the little patient is apt to be peculiar, if he is old enough to take care and protect

himself from pain. I recall one of my earliest observations of this accident, in a little fellow three and a half years of age, who came walking up to me holding the forearm of the injured limb with the opposite hand, at a point a little above the wrist, and keeping it at about an angle of 135 degrees with the arm. This was obviously done to protect himself from the pain of motion. The forearm was prone, and the hand had the position and expression of the dropped wrist of lead poisoning. The pain is sufficient to cause the child to cry out and be restless, disturbing sleep; but it will also often disappear after a night's rest. The character of the pain is especially misleading. Although there is some at the seat of injury, it is apt to be far less than at the wrist; so much so that the patient's attention is constantly directed to this joint, and thus the medical attendant is misdirected, and finding no evidence of fracture or displacement, concludes that some indefinite sprain has been received at this point.

In this opinion he is still further confirmed, if, during the uneasy movements of the first night's sleep, the restoration of the luxation has relieved the patient. Beside this common manifestation of symptoms, there are cases in which the pain is greatest near the insertion of the deltoid, but the physiognomy of the injury is the same. But if the child is tenderly nursed the pain is apt to continue, and may last for several days. If the diagnosis is made out correctly, the restoration of the bone to its proper position will usually be attained by the infliction of a moderate amount of pain, simply by flexing the forearm upward, and also by supinating it at the same time. Its return will be manifested by a decided snap. No after treatment is required. In this respect it differs from every other primary luxation, for, as I will show, the ligament and capsule have not been torn.

It is possible that recurrence may supervene, but I know of no clinical justification of this possibility. Neither, so far as I know, has synovitis or suppurative inflammation occurred as a sequence of the injury. Mr. Hutchinson raises this question; but his cases, where such sequences have resulted,

are not injuries of the kind under consideration, but inflammations from blows or forces in a direction exactly opposite to those which produce the luxation under consideration. These statements of symptoms demand an inquiry into the pathology of the displacement. It is the obscurity which has, until recently, hung around this subject, that has induced the writing of this paper. Even the most observant of writers among the generation that has just passed from the stage had no knowledge of the injury. Malgaigne had observed it in an infant, but Sir Astley Cooper, who wrote a little earlier, makes no allusion to it. The edition of Gross's Surgery published in 1862 has no mention of it, while that of 1882 notices it, if my observations are correct, in a very incorrect manner. Indeed, I hardly know of anything, so simple as I believe it to be, that has groped its way to the light so slowly and with such a wide difference of opinion. To elucidate this statement I will quote freely the opinions that have been entertained with reference to the nature of the luxation. I regard the literature on this matter exceedingly instructive, as illustrating the constant errors that we are liable to commit when not fortified by autopsy, or its substitute, experiment on the cadaver.

Beginning with the American authors, we naturally recur to Dr. Gross as their representative. I have stated above that the earlier editions of his book on surgery contain no reference to the subject. But in that of 1882 he says,— "Another form of dislocation liable to happen in this articulation," referring to the elbow, "is the *partial traumatic*, as it may be termed, chiefly met with in young children, from a sudden jerk, pull, or twist of the forearm when the limb is in an over-stretched state of pronation, the small size of the sigmoid cavity of the ulna at this period of life, and probably also a relaxed condition of the ligaments of the joint favoring the occurrence. The accident is usually caused by the nurse lifting the infant over the gutter, in dragging it rudely up to her side, or in her attempts to prevent it from falling. The head of the radius may be thrown either backward or for-

ward, but the forward displacement is far more common." This description, as regards the pathology, I believe to be entirely erroneous. The head is not thrown either forward or backward. The demonstration to be presently made will, I think, satisfy any investigator. The luxation is well recognised by Dr. Gross, as is shown by the clear description of the causes that produce it.

The London edition of Holmes's Surgery of 1861 makes the following statement, which is repeated in the American reprint of 1881: "The head of the radius is sometimes displaced from its connections with the lesser sigmoid notch of the ulna, and the capitellum of the humerus. This injury occurs at an early age, and has been observed in even very young infants. The causes are either a fall, in which the palm of the hand coming in violent contact with the ground communicates the shock to the radius in such a manner as to cause the upper end to start from its attachments, or a fall upon the elbow itself, or a violent pull on the radius, as when young children are suddenly lifted from the ground by the hand. The head of the radius may be displaced in either of three directions, forward, backward, or outward,—the first by far the most common, the last extremely rare. In any of these the displacement may be complete or incomplete. In the former condition the orbicular ligament appears always to be ruptured; in the latter it may be only stretched."

It will be observed by this quotation that the peculiar luxation we are considering has had a faint recognition in consequence of the statement of the drag upon the hand in young subjects, and also the fact that the orbicular ligament may in them be only stretched. But it is spoken of as occurring in three directions, and is in no wise distinguished in its pathology from any other luxation of the head of the radius. Besides, under the head of "Treatment" he says,—"Whatever be the nature of the displacement, direct extension from the hand will be found the most efficient means of reduction, combined, if necessary, with pressure by the fingers upon the projecting head of the bone in the required direction." Here

we have extension proposed for the relief of a luxation produced by extension.

In the article by Prof. Andrews, in Wood's Encyclopedia of Surgery, under the caption of dislocation forward, we have, as causes, falls upon the elbow, occasionally driving the head of the radius by direct violence in front of the joint, and the same result produced by falls upon the hand. He also says,— "A radius has been known to be displaced forward at its upper end, simply by lifting a feeble child by one hand from the floor." Under the caption of symptoms, displacement from the cause just quoted is regarded as the same as from the others. He regards the position as one forward, and describes the head as in a condition to be felt in this relation by rotation, while pressing the thumb upon the part.

I find nothing more definite than what I have quoted from the three standard authorities just named. The recognition of the existence of the luxation from the peculiar cause of extension, which is, so far as I know, an exceptional one, has been plainly shown to be prevalent. There is no further light upon the subject in the systematic treatises on surgery of this country, or of England. I have not consulted those of Germany or France. To this broad statement there is, however, an exception to be made in the case of our former Fellow, Dr. Hamilton, whose careful labors had not allowed this subject to escape his attention.

He notices it in his treatise on Fractures and Dislocations, and makes a review of the whole subject in the N. Y. Medical Journal of Jan., 1885. In the August number of the Annals of Surgery, 1885, J. Hutchinson, Jr., also discusses it with great ability.

These articles I will criticise, and then present you with a simple demonstration on the cadaver. They cover the ground so thoroughly as to leave but little to be said by me.

Mr. Hutchinson makes no allusion to Dr. Hamilton's article, nor to any of the French surgeons with whom it deals; but he quotes from other French surgeons, and from Dr. Hodges of our own country. They only serve, however, as

foils. He says that it attracted the attention of Goyrand and Guersant in France, the former regarding it as a displacement of the triangular fibro-cartilage. He also quotes from Heath's Minor Surgery of 1883, who reports that Mr. McNab, of Epping, believed the injury to be one of the lower end of the ulna, but makes no objection to his views other than to give the very strange opinion that the injury is at one time at the elbow, and at another at the wrist. He quotes Hodges as believing it to be a luxation, sometimes forward and sometimes backward. He also quotes Tillaud as rejecting the belief that the trouble is at the elbow, and insisting that the latest and best view is that which places it at the wrist. Mr. Hutchinson himself very correctly regards the displacement as a slipping upward of the orbicular ligament, which, he says, it does with a snap. He also declares that when the elbow is flexed and pronated, it slips downward with a snap. In his experiments on the cadaver, he has not been able to produce the luxation in subjects over five or six years of age. He regards the accident as occurring during pronation, for he says,—"In this position the head of the radius is shallow when opposed to the orbicular ligament." These views, he says, he has not found expressed in any quarter, and, indeed, no allusion to them. In his opinion, the displacement is one by elongation. He also makes the remark that the inter-osseous ligament is relaxed. As a cause of the peculiar pain, he suggests the "stretching of the radial nerve during extension."

But far the most important communication is one to be found in the "New York Medical Journal" of Jan. 3d, 1885, in a note quoted by our lamented Fellow, Dr. F. H. Hamilton, who conferred honor on this Association by his fellowship, and whose presence I so much desire to-day. In the 7th edition of his great work on Fractures and Dislocations, which is now, and will long remain, the most complete authority on these topics, he says (page 751), after having treated of dislocations of the head of the radius,—"If the dislocation is not complete, as I have before stated occasionally

happens in children, the annular ligament may not be torn. In such examples the projection of the head of the radius may not be easily recognized, but the motions of flexion and rotation would be impaired. The reduction is effected, sometimes spontaneously, or with slight manipulation. In some cases, however, it is difficult or impossible, owing perhaps to the slipping of the annular ligament over the head of the bone, or to some other inter-articular complication. Poinsot, in a note to the French edition of this treatise, has seen fit to recognise these partial dislocations, forward or backward, when occasioned in childhood by lifting the body by the arms, as a distinct variety of radial dislocations, or, as he has designated them, 'dislocations of the head of the radius downward by elongation.' The grounds upon which he bases these distinctions are ingenious and specious; but they do not seem to me satisfactory." In opening the subject in the "Journal," Dr. Hamilton says that he wishes to give more space than he could give to Poinsot's views in his work; but that he sees no reason to change his own view, as expressed in the last edition of his treatise. Dr. Lucien Damainville translated for him the note of Poinsot, which he felt should be given entire to do him justice. The note is long, but in discussing the subject at present I feel a similar necessity, and will therefore read it as presented by Dr. Hamilton:—

This displacement, peculiar to childhood, and which results from violent traction having been made upon the forearm, has been described by Malgaigne, Denucé, and most surgical authors, when speaking of the dislocations forward and backward, as being a partial variety of one of those. For several reasons, however, it has seemed to us preferable to devote to it a separate paragraph; if, in many of those dislocations of infancy, the head of the radius is found either forward or, much more rarely, backward, it is nevertheless true, as we shall see presently, that in all cases the mechanism of the primitive displacement is the same; the cause by which the bone is kept in its abnormal situation is identical; in all cases the traumatism is due to a violence of the same order. The analogy is as great regarding the symptoms and the prognosis. So alike between them, whatever the direction of the displacement may be, these dislocations in children differ absolutely from the partial dislocations in the adult: the former are entirely of a benign character, and their reduction is often spontaneous; the latter, on the

contrary, are apt to be irreducible, or they always necessitate certain efforts for reduction. In the first case, after the displacement is once reduced, the child is apt to use his arm as well as before, and no precaution is needed to prevent the dislocation from being reproduced. In the second case it is often very difficult to keep the parts in place, and the patient is always obliged to wear an apparatus for a certain length of time. Therefore, the authors mentioned above have been obliged to divide partial dislocations into dislocations in adults and dislocations in children; and, again, when coming to dislocations backward, such as are observed in the latter, in order to avoid repetition, they had to refer the reader back to what they had said when speaking of analogous displacements forward. Those reasons seem to us amply sufficient to justify the classification which we have adopted.

Causes and Mechanism.—The dislocation downward has been most frequently observed in children two or three years of age; after six years it becomes exceptional.

Bourguet, however, met with an example of it in a child thirteen and a half years old. Again, Dugés has met with it in a newly born infant, and Malgaigne in children still nursing.

At all events, certain subjects seem predisposed to this accident;—thus, in two cases, Perrin has seen the displacement take place in both forearms simultaneously or successively, with a persistent tendency to its recurrence.

The immediate cause, noted in the immense majority of cases, is a traction, with or without torsion, made upon the hand or forearm, such as in the act of lifting a child to make him pass over an obstacle or to prevent him from falling, or in trying to force his hand through a sleeve that is too narrow. Rendu and Descamps have observed the dislocation downward in children who had been made to jump as an amusement while being held by the hands.

The mechanism of these dislocations in children has been variously understood by authors. Fournier, and, with him, Duverney, Jr., had admitted an elongation of the radius by stretching of the ligaments; but, being devoid of any anatomical proof, this theory was forgotten before long. The articular displacement being most often very difficult to establish, it was preferred to deny its existence. Gardner and Rendu maintained that the characteristic difficulty in movements of the forearm was due to a hooking of the bicipital tuberosity by the external border of the ulna, and Bourguet, in addition to that, supposes that there are muscular fibres of the supinator brevis interposed between the two bones. The editor of the "Medico-Chirurgical Review" has thought of an epiphyseal separation. Goyrand, observing that the inter-osseous space was too large to allow the hooking of the tuberosity of the radius, admitted at first that the head of that bone was displaced forward by the biceps, and was fixed in that position, against the inferior extremity of the humerus, by the contraction of the other muscles; but, later on, he abandoned this first opinion, and denied that the radius had

any participation in the traumatism in question, seeing in the latter only a sub-luxation of the inter-articular cartilage of the wrist upon the inferior extremity of the ulna. Perrin finally came back to the idea, already enunciated by Duverney, of a displacement downward, and, in order to explain its persistency, he supposed that the edge of the radial cup was pressing against the condyle. Each one of those theories was liable to palpable objections;—we have seen Goyrand criticise very justly the theory of hooking: the one in which muscular contraction intervenes in order to pull and fix the radius forward implies a flexion of the forearm and especially a muscular rigidity which are far from being constant. The localisation of lesions at the elbow cannot be disputed. As to the epiphyseal separation, it has yet to be confirmed, not only anatomically, but also clinically. Finally, the mode of displacement admitted by Perrin would necessarily require a lowering of the radius to the extent of eight or nine millimetres, which would consequently be very difficult to discover, since it is often impossible to establish the least change of relations between the bones. Thus stood the question when M. Pingaud, resuming some experiments formerly made by Streubel, threw an entirely new light upon it. Streubel, while regarding the partial displacement of the radius forward as the characteristic anatomo-pathological feature of the dislocation of childhood, and, while considering the movement of torsion of the forearm as the principal factor in the production of this accident, had noticed that the fixedness of the bone in its abnormal position was due to the interposition of a portion of the capsule and the annular ligament. The results of M. Pingaud's experiments were also to demonstrate beyond doubt interposition of the capsule, while establishing, contrary to Streubel, that the displacement of the radius downward, its elongation, to use Duverney's expression, constitutes the primitive displacement.

If, says M. Pingaud, we examine what is going on toward the humero-radial articulation, when the wrist and the hand of the little cadaver are carried into a state of forced adduction, so as to pull the radius from below, a noticeable separation is seen to take place over the articular interline, and the atmospheric pressure drives and depresses the integuments toward the interior of the articulation. So soon as the traction is abandoned, the radius reascends and resumes its place. In this manner the radius may be made to move back and forth in a parallel direction to the ulna, and without any great effort.

If the traction is suddenly carried somewhat farther, a slight click is heard, and then the following facts are witnessed: (1) The moment traction is abandoned, the radius does not go up so easily or so high as it did previously, and a line of depression, perfectly appreciable to the eye and to the finger, is seen to separate its head from the articular condyle. (2) The head, however, is in its place under the condyle, inasmuch as it does not project abnormally either forward, backward, or outward. (3) The movements of

rotation of the hand, especially that of supination, are not so free as before; in a word, there is somewhere a slight but perfectly appreciable obstacle to the regular performance of those movements. (4) Finally, these movements of rotation cause a slight displacement of the head of the radius in front of the condyle when pronation is slightly forced.

If the parts be dissected, they are found in the following condition: No tearing of muscle or ligament can be perceived at the humero-radial articulation, but there is seen a small segment of the radial cup completely uncovered by the annular ligament, which has moved upward only in front. It is evident that the narrow fibrous ring, which, in a physiological condition, terminates the annular ligament below and surrounds the neck of the radius, has, owing to its elasticity during youth, been gradually stretched by the lowering of the head of the bone, and that it has gradually slipped above it, at the point only where it is not adherent to the deep surface of the muscles covering it, and where the bony cylinder representing the head of the radius offers so little prominence in the child as to be reduced, so to speak, to a simple border.

If, then, the forearm be placed in a state of pronation, a larger portion of the radial cup is seen to emerge from below the annular ligament, and to such an extent that, at the extreme, it might be entirely disengaged from under it, and the head of the radius might be entirely dislocated forward; but the latter displacement is always secondary, and the first stage of the accident now under our consideration consists in the displacement of the head downward. Such is, therefore, the mechanism of the sub-luxation in all the rather numerous cases where the head is found slightly displaced forward; but it could not be applied to the cases where an opposite displacement is observed, viz., that of the head backward. M. Pingaud has remained almost silent on this latter point, but an experiment of Streubel will help us solve the difficulty; indeed, Streubel remarked that if a sudden movement of extension and supination be applied to the forearm of a young subject, the head of the radius is plainly felt being displaced backward. If the same experiment be repeated after having removed the skin and the muscles covering the articulation, the posterior portion of the capsule and of the annular ligament may be seen to be highly distended, while at the same time a depression of more or less depth is produced at the anterior portion, the atmospheric pressure determining at that point the interposition of the corresponding portion of the capsule. Here, again, a primitive displacement downward is necessary to allow the separation of the bones and the interposition of the ligaments, the movement of supination intervening only to determine the direction of the secondary antero-posterior displacement.

To sum up regarding the partial dislocation in children: (1) The primitive displacement, resulting always from a traction applied in the direction of the axis of the radius, consists essentially in a lowering of that bone which

allows the interposition of the capsule and of the annular ligament. (2) The movement of torsion of the forearm has influence only upon the secondary displacement, in order to determine its direction antero-posteriorly.

Upon this note Dr. Hamilton remarks that Poinsot had accepted Pingaud's explanation as satisfactory, and, with some doubt, Streubel's explanation of the sub-luxation backward. "Of the anterior luxation," Dr. Hamilton regards the explanation by Pingaud as "ingenious and plausible;" but he entertains some doubts whether "further experiments will not show that it is not the *true* explanation of all cases belonging to this special class of accidents, and, indeed, whether it will not be found to be the exception rather than the rule." "I shall be disappointed," he says, "if further experiments do not show that in *most* of the cases there is nothing different from a sub-luxation as it occurs in other joints; and further, if this is shown to be the fact, then the displacement observed by Pingaud must only be regarded as a complication." He objects, also, that Pingaud's theory only accounts for the forward one, while Streubel's explains the one backward as a secondary movement. But the whole matter is, in his mind, unsatisfactorily explained. In closing, he offers as a possible cause of the symptoms in the cases treated of, that "they are not dislocations at all, but only examples of a temporary injury done to the musculo-spiral nerve, which, as it emerges from beneath the triceps and passes in front of the elbow between the supinator longus and the brachialis anticus, would seem to be exposed to strain when the forearm is in a position of extreme extension, as it is when the child is lifted by the hand."

This review of the subject in hand is, I think, sufficiently complete to give us an idea of the confusion that has prevailed with reference to it up the present time. When in Europe, in 1884, I had the topic in mind, and made a few inquiries of some distinguished surgeons whom I met; but in in no instance did I happen to find one who had any definite opinions on the subject. As the best method of solving my doubts, I proceeded to make observations on the cadaver, and

inasmuch as the peculiar luxation does not seem to occur after the age of five or six years, and very rarely indeed as late as these ages, it must obviously result from some anatomical condition peculiar to infantile life, and, probably, best exhibited in the very young. I have therefore made some dissections in infants but a few weeks old, and now present them to you. I had made these observations before either Poinsot's or Hutchinson's notes had fallen under my eye. But you will see, by inspecting the preparations, that both Pingaud and Hutchinson have anticipated what I have to show, though I believe the condition is more simple than even they have thought it to be. Before exhibiting this specimen to you, permit me to sum up this discussion by detailing my own belief with reference to the pathology of the injury which is the subject of this paper, produced by the cause cited, namely, direct traction of the forearm by extension.

The radius is pulled down, causing an elongation of the forearm which is attached to it without any rupture of the orbicular ligament, and is, therefore, a sub-luxation of the radius downward. It passes neither backward nor forward. It is unique in its character. Without demonstration it would never have been understood; for it has no analogue. This accounts, I think, for the wild speculations to which I have referred. There has been no autopsy; we must therefore resort to the cadaver. It fortunately happens that experiment in this direction is very convincing. The head of the radius in the infant is undeveloped, and, while it is larger than the shaft, presents the form of a cone with its base upward. When traction is made downward, and especially if the forearm is prone, the radius moves in this direction from an eighth to a quarter of an inch, when a considerable, though not easily measured, force is applied. At this point it is arrested, not by the orbicular, or any other ligament of the joint, but by the other attachments of the radius to the ulna, notably the oblique ligament. The evidence of this I will now give you in the specimen marked 1, which is

the forearm of an infant six weeks old, and which has been severed from the arm and the ligaments removed. It will be seen that a very great force would be required to bring the radius further down than about the eighth of an inch. It plays up and down easily so far, but is suddenly arrested by the attachments other than those of the joint. This observation disposes of the speculation with reference to a disrupted orbicular ligament. This could be easily slipped over the head of the radius, were not this bone restrained by other attachments; but it is so restrained, and any great violence which would overcome this restraint would remove this injury from any consideration as a regular luxation.

The definition of a regular luxation must still hold as being one that is produced by definite forces, and the bones are held in their abnormal position by definite conditions. In this luxation downward, the radius can go so far and no farther, and this without disruption of the orbicular ligament. I will call your attention to another point of the anatomical condition: The surface of the ulna, against which the head of the radius rests, is entirely flat. It has no curve or ridge that might afford it support in its altered relation. In this respect it differs from all other dislocations. In the specimen marked 2, you may find the whole demonstration in a very simple way. By drawing down from the hand it will be observed that the orbicular ligament is put upon the stretch; its lax fibres, being drawn up a cone toward its base, are subjected to the distending power of a wedge. The articulating surface of the head of the radius parts from that of the humerus a little more than the eighth of an inch. Fibres from the anterior ligament of the elbow joint run into the orbicular ligament and hold its upper edge. Some of the circular fibres which are applied to the neck now slip over the head, and the strain downward draws them in toward the ulna, making a deep crease. Perhaps the pressure of the atmosphere is an element in the production of the depression. The drawing in of the fibres above the head presents the force that defines the sub-luxation. As has been said earlier

in this paper, if the child is tenderly nursed, this may remain; but it has, on motion, an easy tendency toward restoration. In manipulating the arm for the purpose of examination, it often happens that the whole pain and obstruction to motion disappears with a decided snap. The treatment most likely to produce this result is to flex the forearm on the arm, and, at the same time, to supinate it. This you can demonstrate on the arm before you. I think no one can believe, on inspecting these specimens, that traction downward can result in any displacement either forward or backward. To the singular fact that the pain is so much more at the wrist than at the elbow, I cannot give a definite explanation. I am inclined to think that the radio-ulnar ligament at the wrist is sufficiently stretched to cause the suffering. We are too familiar with pains at a point remote from the injured part to be troubled with doubts as to the location of an injury from this circumstance alone. The symptom of pronation is, I think, easily accounted for: When the elongation is produced, the pronator radii teres is rendered tense, and the oblique ligament which runs parallel with it is also tightened.

It is unnecessary to say more upon the subject: nothing could make the demonstration more clear. The long quotation from Poinsot was necessary for a full understanding of the topic in hand; for justice to Pingaud could be rendered only by citing his labors.

SOME OBSERVATIONS ON THE USE OF THE MINERAL WATERS OF SARATOGA.

By R. C. McEwen, M. D., of Saratoga County.

November 16, 1886.

It is not proposed, in the brief paper I desire to present, to enter into a detailed historical and analytical account of the valuable waters of Saratoga, or detain you with a geological description of the section of country in which they are found. I desire simply to bring before you some considerations of a more practical nature related to their general therapeutic use. It would be a new departure on this side the water, were those afflicted with varied ailings of a chronic nature subjected to preparatory treatment, to be afterwards turned over to a course of this or that appropriate mineral water, as is so often the custom abroad. Yet the day may not be far distant when such will be the case; for the people are apparently in advance of the profession, inasmuch as there is at present an increasing demand for this form of medication; a demand which must lead to a more thorough understanding of the subject of mineral-water therapeutics, and the opportunities afforded by our waters at home to meet the requirements of individual cases of disease.

The mineral waters of the United States are no less adapted to therapeutic use than those abroad; but fashion has sent the invalid to some foreign spa, and, strictly attentive while there to all that the cure demands, he returns strongly impressed by its efficacy, though as much might be readily accomplished at home under a similar *régime*. Our mineral waters are, however, in their infancy of use. They are given a place of minor importance among our therapeutic resources, and have passed but little beyond a local reputation, unless it may be

in the case of some found at this great American spa of Saratoga. And yet, we may ask, from the time that Sir William Johnson was borne upon a litter through the trackless forest to partake of the Indian healing water, what has been the method of development that has characterized the use of these valuable waters?

A great American spa has been developed, a beautiful village with shaded avenues, tasteful villas, pleasant drives, and caravansaries the finest the world has produced, have been the outgrowth of a reputation gained by these medicinal waters. Thither fashion has brought its votaries, and a season at Saratoga has become proverbial. To drink of the waters, and vary the daily life with a digest of the fluctuations of the matrimonial market; to drink, and pass the time in a round of pleasure and gaiety; to drink without forethought or care, and partake of the bubbling fountains indiscriminately,—has been the custom during all these days of development. The springs have flowed into the hands of private speculation, and joint stock companies with presidents and boards of directors have sought to gain interest on an investment by wholesale advertising in an empirical manner of the curative powers of individual waters. The effort is legitimate in the light of mercantile enterprise, and the capital invested must find its return in the sale of bottle and barrel, and the creation of a market by the usual means of the glittering advertisement of goods. Admission to the springs at five and ten cents a head has become a profitable source of revenue, and the competition between rival springs has culminated in a spring-water warfare, the merits of which are but little known and appreciated, though creating a doubtful uncertainty in the minds of some as to the purity of these ever-flowing fountains. Follow the drinker at the springs, and, except in the case of one experienced, you will find a mingling of drinks and a series of potations which can but cause the system to rebel, and the drinker to conclude that the waters are humbug, and the spa a therapeutic fraud. A Western lawyer, who, after his morning meal, began his search-

ing of evidence as to these saline waters, partook of twenty-three glasses before the hour for the mid-day repast, and required professional attendance until the following day to save him from collapse, with a train of symptoms that were essentially choleraic in their nature. A learned judge, who ate a hearty meal at mid-day and repaired to a neighboring iron spring, drank three glasses of the sparkling water, and died of cerebral apoplexy an hour or two after. A foreign minister, who took his morning draught of water and followed it with a tempting saucer of acid berries, presented an appearance of bloated dimensions, and called loudly for relief from such abdominal distention. The visitor at the iron springs has taken two or three glasses of the refreshing beverage, and mental confusion, a result of cerebral congestion, is followed by headache so severe that the drinker is surprised at so marked an effect from so little water. In many instances the proper effect of these saline waters is not obtained, and after a few days of their use the system becomes disturbed, the tongue is coated, and appetite lost, headache and abdominal distention follow, while the drinker, wondering at his condition, is ready to denounce the springs, regretting his absence from the comforts of home, and his folly in partaking of fountains that bubble forth only, in the words of Gail Hamilton, "solutions of salts and senna."

But added to this indiscriminate and injudicious use of the springs is the prevalent indiscriminate advice as to how, when, and in what manner a water may be taken. All at the spa are authority:—the resident, who has his favorite spring; the boarding-house keeper and hotel proprietor, who refer to their own experience; the chambermaid, who presides over your apartment; the Jehu, who knows the roads of the region,—all know a thing or two as to the use of the waters, and what is best for the visitor during his temporary sojourn. And often added to this is the advice of "my physician at home," who directs the taking of this at one hour, and that at another, to be followed by a draught at bed-time, the patient anxiously waiting the expected beneficial result.

Though it may be said that many make daily use of the waters and are not injured thereby, yet the question of their proper therapeutic application is not to be thus decided, nor are such results obtained as may be secured by their more judicious use in a manner best adapted to individual cases. Again, how little attention is paid to the question of diet while partaking of the waters? Few visitors consider it an important matter; and since both appetite and digestion are improved under the enlivening influence of the daily draught, the elaborate *menu* of a first-class house tempts the palate and leads to indiscretion as to quantity and quality of food. The picture is not overdrawn, and from year to year such has been the course prevailing at the springs. What the waters may accomplish, what cures may have been effected or improvement obtained in the many instances of functional departure for which the waters may have been taken, are mostly matters of individual experience. No systematic course of observation has been adopted; and the reputation of these saline waters has followed more from their general use in a general way, than from their more desirable, proper therapeutic application. Clinical investigation, and a report of cases and the conclusions to be derived therefrom, have added but little to their value, and they have been made use of by the profession generally, as one would prescribe a saline draught for the simple purpose, as it were, of washing out the intestinal tract. That they have a wider range of application, and are possessed of therapeutic properties making them a valuable addition to the resources of the healing art, is a fact becoming better known and more generally appreciated. But how they should be used, at what times, in what quantity, under what restrictions of diet, how their use should be varied in individual instances, and how adapted to the varying degrees of functional or organic change, are questions that have not as yet received their full measure of attention. There are many conflicting opinions among the profession in regard to the action and use of these waters. It is within the writer's knowledge that some holding prominent positions in the pro-

fession, and hailing from the great medical centres of the country, have advised against their use, as laying a foundation for disease in the future; others, that their action extends but little beyond the simple catharsis they produce, or, again, that by their continued daily use too much mineral is thereby added to the system, and the drinker may reach a state of saturation by retention of salines within the system; while some who live within the shadow of the sanctuary prescribe them at random, and pay but little attention to their proper therapeutic application.

The clinical study and report of cases, it might be assumed, belonged more to the resident physician, as his opportunities for observation were so much better; but in the light of commercial enterprise, professional advice has not been considered essential. The springs are open to the public at all hours of the day, and the general opinion being prevalent that the waters are harmless, the resident physician has been content to advise properly those who may call upon him, it being an exceptional instance that he has had occasion to take further note of the case. Each season that passes demonstrates the advisability of proper professional direction, and it is not an unusual result that death is produced in some instances for want of such guidance. A prominent physician, now deceased, long resident at the springs, was wont to say, could he but have his way he would put a padlock upon all these springs after the hour of nine o'clock in the morning. With a true appreciation of the necessity for some professional supervision during a season at the springs, is it not incumbent upon the profession to arrive at a better understanding of the action of these waters, and direct their patients more carefully as to their use?

It is hardly necessary to enter into a detailed statement of the various diseases to which these waters are applicable. But to bring before you something more directly clinical in the way of their use, and in demonstration of their therapeutic properties, I desire to present briefly some testimony as to their efficacy in certain cases. One of the springs, the Ha-

thorn, has of late adopted a partial professional supervision of the use of the water. Though from the necessities of the case the plan of supervision is confined essentially to a diagnosis of the case, and direction as to a proper use of the water, the gradually accumulating testimony as to its therapeutic power is a matter of interest to those in charge and of value to the profession at large. Of the twelve hundred cases applying for advice, representing a variety of disease from mere functional departure to conditions of organic change, the forms of indigestion, with constipation and torpidity of the liver, represented the largest class, while rheumatic and gouty diseases, diseases of the skin and ailments arising from malnutrition, were the next highest in number. Take the following as one among the many instances of its beneficial action:

Mr. M. F. C., a resident of Staten Island, aged about forty-five years, has been under treatment for the last five years, suffering, as he states, from attacks of nephritis, accompanied by scanty and high colored urine, secreting not more than a gill a day, with constant deposit of brick-dust color, which would generally be as thick as paint at the bottom of the vessel; pain in the back, constant tenderness, more constant over region of left kidney; bowels obstinately constipated; states that he never had a passage from the bowels during the five years except from the use of active cathartics; that certainly once a month pain in back would be increased, and accompanied by inflammation of the knee joint, extending to the ankles and feet, lasting two weeks, and leaving him more or less lame; never to his knowledge has passed any calculi. His physicians had advised him to go to Carlsbad, but he concluded first to visit Saratoga, and try the waters there. At the time of his first visit to the spring he could not stand erect, and with great difficulty walked down the entrance into the spring enclosure. Of his own accord he began the use of the Hathorn water, taking six glasses of the hot water in the morning before breakfast; at 2 P. M. four glasses of the cold water, and four glasses in the evening. He had taken his fourteen glasses of water daily for two weeks. He was a man of large frame and powerful physique, and had suffered no ill effect from this excessive use of the water; on the contrary, his pain had ceased; he suffered from no symptoms of tendency to attacks of arthritis; urine was freely secreted, and all sediment had disappeared; appetite had returned; he could now sleep. He expressed his surprise at his improved condition. Mr. C., seven months afterward, in answer to an inquiry as to his health at that time, writes as follows: "I am glad to inform you that the result of drinking the Hathorn water has

been very beneficial to me, even beyond my expectation. You know the improvement made while staying at the springs: it has continued. I have not had a pain in my kidneys, or a return of the inflammatory rheumatism, since drinking the Hathorn water. I have not felt better in years: able to attend to my business as well as ever. My appetite is good. I drink the water as regularly as I did when staying at the springs, but not in such large quantities."

Mr. T., of New Haven, Connecticut, having symptoms of similar character, accompanied by the passage of small calculi, testified of his own accord as to the benefit derived from the use of this water; that it had been to him, as it were, "the water of life," relieving him entirely from the severe attacks of nephralgia from which he had so frequently suffered.

Mr. J., of St. Croix, arrived at Saratoga thoroughly jaundiced from obstruction of the biliary ducts, and subject to frequent attacks of pain from passage of biliary calculi. After some six weeks' use of the water, returned home entirely free from all the symptoms that had characterized his case.

But it is hardly necessary to prolong this paper by a farther report of cases. To one knowing fully the benefit flowing from a judicious use of this water, it is a matter of inquiry why it is not more generally endorsed by the profession. Its constitution as shown by analysis, and the increasing evidence gained by experience of the value of waters containing a large proportion of chlorides rather than sulphates, should place it among the foremost in therapeutic use, being free from irritating and depressing influence, and imparting increased vigor to the various functions presiding over animal life. Reference has lately been made in many of our journals to this fact, and in the language of one (Med. Record, Sept. 26, 1885), "recently Sydney Ringer, of London, and Dr. Hayes, of Aberdeen, have emphasized the important influence which the chlorides exert in accelerating intestinal action, and thus far have confirmed the earlier experiments of Von Voit with reference to the influence of the chlorides, especially the sodium chloride, on the oxidation of albumen and the increased diminution of urea." The evidence of Von Mering, Frerichs, and Sir Henry Thompson is presented as confirmatory of this view; and an article by Dr. Branche, in the London Medical Record (July 15, 1886), upon the physiological action of the chloride of sodium, also refers to the beneficial effect of min-

eral waters of the type referred to. Though none doubt, perhaps, that the waters found at Saratoga are possessed of marked medicinal properties, yet were the objections connected with their indiscreet use sufficiently appreciated, it would not admit of question that those who visit the springs need proper direction from their professional advisers at home. Some restriction should be placed upon the free imbibing and mingling of these saline waters; and these thoughts are placed before you that you may advise, when sending patients thither, the prudence necessary to secure the greatest benefit.

With a careful analysis made of the waters, with their value tested by clinical observation and experience, with the more careful selection of a water in accordance with the diagnosis and conditions of the case, and with more strict medical discipline while at the springs, much more might be developed in regard to these valuable waters, and they might take a position second to none of the noted spas abroad.

"RECOVERY" *VERSUS* "CURE."

By Alfred Ludlow Carroll, M. D., of Richmond County.

November 16, 1886.

Most of us who have passed from the vernal and verdant to the autumnal season of professional life must have entertained at first a virtuous and quite unselfish indignation, and later a chastened and resigned grief, at the imbecile credulity which impels the general public (including even many of the so-called educated class) to give its childlike and unreasoning faith to the much advertised virtues of every new panacea for an exhaustive alphabetical catalogue of all the ills that flesh is heir to; to lavish its seventy-five-per-cent. silver certificates on "golden medical discoveries;" girdle itself with insoluble liver-pads; embrocate itself with saintly Jacobin naphtha; fatigue its peristalsis with patent purgative pellets; compress its feminine abdominal viscera with "electric" corsets, and pacify its uterine functions with Lydia Pinkham's omnipotent vegetable compound; narcotise its babyhood with soothing syrups, and upset its infantile digestion with amylaceous substitutes for mother's milk; and otherwise comport itself in an idiotically suicidal or homicidal manner. We have bewailed its misplaced confidence in homœopathic specifics, herb-doctors, "seventh sons," "natural bone-setters," clairvoyant mesmeric mediums, "faith cures," and similar ignorant and irrational delusions; and we have probably reached the conviction that, accepting the alternative proposition of the proverb which asserts that at forty every one is either a physician or a fool, the greater part of mature mankind certainly cannot be ranged on the medical side of the category.

But have we sufficiently considered how much the regular profession has had to do with encouraging such complaisant gullibility? We laugh at the lack of logic which confounded

as cause and effect the healing of a wound after the anointment of the weapon which inflicted it, or the impregnation of some detached fragment of the blood-stained clothing with Sir Kenelm Digby's "sympathetic powder." We are amused on reading that Sir John Floyer commended to his royal client, Charles II, as a cure for the plague, to "take a cock chicken and pull off ye feathers from ye tayle till ye rump bee bare; you hold ye bare of ye same upon ye sore, and ye chicken will gape and labour for life, and in ye end will dye. Then take another and do ye like, and so another still as they dye, till one lives, for then ye venome is drawne out. The last chicken will live and ye patient will mend very speedily." We temper our admiration for Sydenham's genius with some skepticism as to the accuracy of his aim when he loaded his polypharmaceutical blunderbuss; and we have outgrown the "antiphlogistic" hypothesis of our later predecessors that bleeding, blistering, vomiting, purging, and starvation "cured" all the sufferers who survived such commonly applied treatment; we have noted the swing of the professional pendulum from Brown to Broussais and back through Graves to Todd, and counted its lessening vibrations while observers like Gull and our own Flint were watching the unimpeded clinical course of diseases, until to some amblyopic eyes it seems to have come to rest in "therapeutic nihilism," and to some minds the highest flight of medical ambition is to make a scientifically positive diagnosis, and to verify it by a post-mortem examination. And yet, if we look about us to-day, we may find plentiful evidence of the retention of the old "*post, ergo propter*" mode of false reasoning, from the young practitioner whose college notes of his professor's prescriptions have been only supplemented by references to "Medical Formularies," down to the superannuated one whose personal "experience," unenlightened by any comparison with the collective investigations of the whole profession, has but confirmed the errors of his earlier years, and who, mistaking senility for seniority, looks back with dogmatic self-satisfaction over a long and ill-

employed career. It may even be asked if a quasi-Rosicrucian belief in the specifically curative antagonism of drugs to diseases be not actually on the increase in the present generation. Despite the superredundant plethora of our pharmacopœia, almost every mail brings circulars from manufacturing druggists, informing us of the miraculous action of new remedies with barbarous names, or instructing us as to the "indications" for compound pellets or potions which they thoughtfully furnish at wholesale to spare us the intellectual effort of excogitating combinations or doses for ourselves; and although some of us may consign these labor-saving benefices to our waste baskets, the array of such wares on the shelves of the apothecaries, and the multitudinously published certificates of their efficacy from graduated physicians, prove that far too many "busy practitioners" put their small stock of pathology and pathogeny in their pockets and derive their therapeusis from the catalogues of traders who understand neither normal nor morbid processes; selecting for their patients "anti-chill" or "anti-nervous" pills from the extensive list of "McK. & R.," or blindly waging battle with polynomial conglomerations of which they dimly surmise either the proportions or properties. Two or three of the smaller fry of medical journals exist solely as media for empirical notes on the medication of maladies, irrespective of the individual conditions of different cases; and even the best of them teem with therapeutic formulæ and queries concerning the cure of disorders described only by name, with every now and then a more pretentious article from some inventor of an uniformly successful treatment for a specified item of our provisional nomenclature which has already been the subject of a dozen similar claims by preceding writers. With practice such as this; with indices of "diseases and their remedies" appended to standard text-books on materia medica; with the unblushing nonsense which profitably fills the advertising columns of domestic and foreign medical periodicals; it is little wonder that the public should adopt the myth unconsciously inculcated by its professional advis-

ors, and economise fees by recourse to "counter-prescribing" druggists, or be victimised by the wiles of ignorant and dishonest charlatans.

For the proper exposition of the problem we must admit that recoveries occur under, or in spite of, all sorts of treatment, or no treatment at all. Patients got well of serious maladies under the heroic assaults of our forefathers; they get well to-day under the infinitesimal ministrations of ultra Hahnemannism, and under other sectarian "schools" of practice. If they did not, such schools would long ere this have ceased to exist. Cases of pneumonia recovered when, and before, Watson wrote that "the great instruments to be employed in the treatment of inflammation of the lungs are blood-letting, tartarized antimony, mercury; of these blood-letting is the chief;" they recovered when Todd stimulated them to the verge of intoxication; they have recovered under cold packs and hot poultices; small doses of aconite and huge ones of quinine; active empiricism and passive expectancy; and a question already beginning to agitate the bacteriomaniacal mind is whether they will continue to recover if saturated with germicides to destroy Friedländer's pneumococcus. Typhoid fever has found a favorable issue under astringents, repeated mercurial purges, two-hundredth "attenuations" of lachesis, iodides, mineral acids, or pure air and milk diet. Whoever has watched the current of medical literature will easily recall a long series of infallible remedies which have each in turn had a transient but enthusiastic acceptance, and then dropped out of use and almost out of memory. In fact there are few disorders which—on the half-avowed belief that they were exotic entities—have not been subjected to diverse routine druggings by various sets of men, each of whom has confidently appealed to statistical results to demonstrate the superiority of his favorite recipe; and when the imagined "indicatio morbi" has failed to designate a curative combination of medicaments, tentative "blind-man-buff" efforts have been made to catch the intruding ailment with "alteratives"—a term which covers a vast

expanse of ignorance, and for which I have vainly sought an intelligible definition.

Since the annunciation and general adoption of the "germ theory," there may seem to be some excuse for faith in antidotal drug-action in acute zymotic diseases; but in the most typical of these (with the doubtful exception of malarial fevers, wherein we may arrest the paroxysms, but not cure the patient if he remain amid miasmatic surroundings) we are confessedly impotent to abbreviate or prolong their self-limited course, and, save in the matter of prevention, we are as far from dominion over the protophytic ferments as were our ancestors when Linnæus taught that dysentery, whooping-cough, small-pox, measles, plague, and syphilis, as well as itch, were due to the invasion of "animalcules." If we accept phthisis as a "germ" infection, there may still be some doubt whether the recently suggested "cure" by flooding the infected lung with spoiled broth, in order to overwhelm the tubercle bacilli with superior numbers of the bacteria of putrefaction, may not be rather more unpleasant for the patient than the original complaint; and those who are familiar with the tenacious vitality of micro-organic "spores" may question if it be practicable to kill them without also killing the person in whose tissues they have found lodgment, and may rest content with endeavoring to fortify the bacteriophagous property of the leucocytes in their struggle for supremacy.

I would not be misunderstood as decrying all medicinal treatment, or denying its frequent utility in aiding toward recovery; but it is the patient who is to be treated, not the disease. The aim of the wise physician should be, as Bichat said, to obviate the tendency to death; and as individuals differ, so will this tendency vary in different patients with the same disease. In one case of pneumonia it may be through pulmonary asphyxia, in another through asthenia or cardiac failure: in these, energetic though opposite treatment will be needed: in a score of others, nature alone will subdue the disorder if the patient be placed under favoring con-

ditions for recovery: in all, the victory is nature's own, and our best-directed efforts have but lifted temporary barriers from her way. To repeat an argument which I advanced many years ago: "If it be granted that health is the normal state of life; that the natural laws always tend to maintain health, or to restore it if it be disturbed; that disease means impediment to the operation of these laws; and that recovery (a far better word than 'cure') implies, not the establishment of some new and artificial process in the economy, but simply a return to the normal state,—then the vast possibilities of hygienic treatment become evident, and we are better prepared to regard nature as the great active verb, and drugs as, at best, auxiliaries, necessary to qualify expression in certain moods and tenses, but only aiding, not giving, the full meaning."[1] We have our heritage of arbitrary groups of cathartics, diuretics, diaphoretics, anodynes, etc., of whose operation we know the "how," but scarcely the "why," and which may stand us in stead as mechanical evacuants, "safety-valves," or palliatives: modern experimental research has given us a little more exact information touching the "physiological action" of a few toxic substances, and we can frame a plausible reason for our attempts to rouse a flagging circulation with amyl-nitrite or glonoin; to strengthen the heart's impulse with digitalis or strophanthus, or lessen its force with aconite; to excite the liver to augmented urea-formation by podophyllin, euonymin, salycilates, or benzoates; or increase uric acid excretion by means of colchicum. We can even philosophize upon the theoretical diversity between anelectrotonus and catelectrotonus, while we are using ascending or descending currents indifferently either to stimulate or to soothe the nervous centres. We can hold some cases of epileptic instability under curb with bromine salts so long that perhaps the patients may recover during the treatment, as they occasionally recovered when they were turned "deeply, darkly, beautifully blue" with nitrate of silver, and as they may recover under

[1] "Hygiene in its Relations to Therapeusis." N. Y. Med. Gaz., July 3, 1869.

homœopathic triturations of "calcarea carbonica" or infinitely attenuated dilutions of "acidum hydrocyanicum"—if the convulsive explosions be not the outward and visible signs of an inward organic lesion. We may relieve many cases of rheumatism with salycin; we may with somewhat stronger confidence hope that syphilis will not relapse after our regimen of mercury and iodides—though even here we shall be disappointed unless the natural reaction of the tissues completes the recovery; but the influence of our most trusted remedies is hardly yet susceptible of a closer definition than that which ascribed the soporific effect of opium to its "*vis dormitiva*," and their action is evanescent unless they be pushed to the absolute destruction of life or irreparable impairment of structure. In fact, the greatest difficulty with the inexpert practitioner, as with the incipient tippler, is "to know when to stop," and his utmost fortitude is required to fulfil Flint's injunction, "Unless you feel sure that you can do good, be content to do nothing."

In such an assemblage as this my remarks may seem superfluous. I take it for granted that the Fellows of this Association, as many as are here present, rationally and sagaciously use medicinal agents when necessary in their practice, with great benefit to their patients; withholding them, with even greater benefit, when the "*vis medicatrix naturæ*" under auspicious sanitary conditions is manifestly competent to perform its restorative work; often rectifying functional derangements; sometimes, perchance, helping to arrest a sudden conflagration before it has spread beyond control; always subordinating art to nature; and, except where causes can be directly removed, as in the expulsion of ascarides or the neutralisation of a chemical poison, never arrogating for their prescriptions all the credit of the reëstablishment of health. But we cannot close our eyes to the existence in the outer world of a pernicious superstition regarding the all-sufficiency of drugs, *per se*, from the "regular" routinist, who on a guess-diagnosis finds a fresh "complication" and writes a fresh prescription at each visit (and whose patients

therefore deem him a person of infinite resources and passed-master of his craft), to the conscientious homœopathist who religiously believes that the "totality of the symptoms constitutes the disease," and who consults his "pathogenesis" for some highly "dynamised" sugar-plum to cover each new subjective sensation in "the little finger of the left hand," or the latest Parisian ultra-transcendentalist who announces that if the patient be previously "hypnotized" the proximity of the outside of a corked vial is all that is needed to induce pharmacological phenomena. In this nineteenth century, as in the time of the regal pedant, James I, "because peraduenture when a sicke man hath had his disease at the height, hee hath at that instant taken tobacco, and afterward his disease taking the naturall course of declining, and consequently the patient of recouering his health, O then the tobacco forsooth, was the worker of that miracle. . . . For an euident proofe of mistaking in the like case, I pray you what foolish boy, what sillie wench, what olde doting wife, or ignorant countrey clowne, is not a Physician for the toothach, for the cholicke, and diuers such common diseases? Yea, will not euery man you meete withal, teach you a sundry cure for the same, and sweare by that meane either himselfe, or some of his neerest kinsmen and friends was cured?"[1]

If we would elevate our profession in popular estimation above the level of a mere trade, needing only an apprenticeship in memorising names of maladies and empirical formulæ, it cannot be too often or too urgently repeated that the true physician's skill consists in applying scientific knowledge and discriminating judgment to the particular requirements of each pathological problem set before him; that to "cure," in its etymological sense, means to "care for"—less, oftentimes, by the administration of pharmaceutical substances than by attentive regulation of hygienic conditions, without which recovery is beyond reach, and

> "Labouring art can never ransom nature
> From her inaidable estate."

[1] A Covnter-blaste to Tobacco. Imprinted at London by R. B. Anno 1604.

IS ERYSIPELAS EVER A STRICTLY LOCAL DISEASE?—IF NOT, WHAT SHOULD BE ITS RATIONAL TREATMENT?

By Frederick Hyde, M. D., of Cortland County.

Read November 16, 1886.

I have been led to ask the above question from noticing so often the great stress given to the local treatment of erysipelas. It should be remembered that there is no tissue nor texture of the body which may not become the site of this disease, either primarily, secondarily, or simultaneously. In its gravest forms we often saw this exemplified in the memorable epidemic erysipelas which prevailed so extensively in the United States from 1843 to 1849.

Occasionally, the same severity of the disease may be seen in the sporadic, phlegmonous variety. Not a few of the latter examples have fallen to my care, in which all the textures were invaded nearly at once, vesication following rapidly. My observations have taught me, for many years, that the mildest example of the cutaneous form of this disease is produced by so slight an internal cause as to allow it to run its course with scarcely any systemic symptoms, terminating in resolution in a few days, save a little desquamation of the cuticle.

Writers upon erysipelas speak of the traumatic, idiopathic, cellulo-cutaneous, bilious, œdematous, phlegmonous, sloughing, or malignant varieties. When the disease appears on the surface of any part of the body, and runs its course restricted to the skin, it represents the simplest type of the disease, though in some examples its course may be more protracted, affording suspicion of complications, such as broken health from previous disease, dyscrasia, or senile conditions in the

older patient, changing its innocent type, allowing it to become erratic in its course, in such cases often terminating fatally. In the simplest variety of the disease, so free from constitutional disturbance, the eruption or skin redness will subside in from six to seven or eight days, and the patient is well.

Let it be understood, that when we refer to primary cutaneous erysipelas, we mean that its cause is as non-local as in the severest types involving by extension or simultaneously all the textures both soft and hard. In all cases of the disease, its cause is found in poisoned blood, the lesser or greater intensity of which will determine its mildness or severity. From the minutest skin lesion as well as from the largest wound involving all the structures of a part, may be seen alike the earliest localised manifestations of the phenomena of the disease. The smallest wound acts the same as an exciting cause, as when its first signs follow the gravest lesion, and often when the disease appears first locally in the site of the smallest wound, in its progress it may rapidly involve multiple textures with as grave results as when it follows upon extensive injury. Erysipelas may seize a patient when the surgeon is unable to discover that there has been the least injury. It is not very unusual, when an injury has been inflicted upon one part of the body, that the evolution of the local signs of the disease has appeared remote from the visible local lesion. This has been true in many examples occurring to myself. More often has this been illustrated when the only injury was upon the extremities, as in fractures both simple and compound, as well as in superficial and deep wounds of the soft parts, when erysipelas first appeared upon the nose, cheeks, or in the parotid region, including in its progress the entire face and scalp, running its course without its local signs in the wound.

How does the pathology of simple non-specific traumatic inflammation differ from that of erysipelatous inflammation? First, in the character of the products. The exudations of serum and lymph in the former resemble more their normal

state, such as belongs to non-poisoned blood, and on subsidence of the inflammation are capable of making fibro-cellular tissue, serving the purposes of repair. The pus products in this form do not degenerate readily, and its corpuscles are found in laudable pus. In the latter erysipelatous form, in the simplest cutaneous vesications of the cuticle, the contents are morbid examples of serum varying in color and consistence as the blood is more depraved. Never is pure or good lymph the product; it is aplastic, being insusceptible of organising normal cellular tissue, is non-reparative, easily degenerating into a purulent material which never contains the normal pus corpuscle.

The clinical facts of the suppurative process in the phlegmonous form of the disease show it to be diffuse; the earlier inflammatory products degenerate at once, so that no barrier as in the simple abcess wall is formed. The purulent infiltration blended in the severer cases with the *débris* of the connective tissue necrosis diffuses itself without hindrance amid the outer and deeper textures to the extent in some cases of half or two thirds of a forearm, arm, leg, or thigh, or more than half the dorsal surface of the back, and never showing the signs of the pointing of a simple circumscribed abscess. Distinct fluctuation in these examples is never present, since the product in question has no distinct resisting boundary wall. The surgeon learns that if he waits for the marked pointing of a simple abscess he incurs a much greater risk of the destruction of important structures, than to cut at once through the diffusely inflamed parts without waiting for localised pointing, knowing that the presence of this poisonous material is adding to the destruction of the texture, and rapid exhaustion of the strength of the patient. In favor of the poisoned blood in this disease giving it its constitutional character, is the intense virulence of the earlier liquid products of the disease, as witnessed by me in several examples of accidental inoculation, when but a small portion of this material came in contact with the minutest skin-break, allowing its imbibition to cause the earlier local phenomena of the disease,

in some cases within the space of an hour at the place of inoculation. There comes vividly before me the following instance:

In an autopsy of the body of a patient who had died of this disease, made more especially with reference to showing the manner of extension of the disease upon the membranous and visceral structures of the abdomen, a young, healthy physician assisting, when asked before commencing the dissection if he had any skin-breaches upon his fingers or hands, replied that there were none, and though assisting but little, received the virus, and in one hour after was seized with severe pain in the right index finger, attended with redness of the skin in the course of the lymphatics, the pain still more severe, which in two hours had reached the axilla. Deep suppuration soon followed in the hand, forearm, arm, and axilla, with necrosis of some of the fingers and hand bones, the patient recovering after great peril to the life powers, at the end of three months and a half, with deformity of fingers and hand, with impaired use of the forearm and arm. After this patient began to recover, he remembered that a few days before his attack he had what he called a hangnail on the finger in which the pain first appeared. It was my duty to serve in the case of more than one ardent co-professional worker in the epidemic referred to in the beginning of this paper, who had received the disease by inoculation while in the tactile part of the care of their patients; but, unlike the result in the case just noted, too often did their lives go out while ministering to their stricken patients. My observations do not include a parallel instance of any inoculable disease which develops itself so rapidly as epidemic erysipelas, except it be the stings of a wasp or the bite of a rattlesnake. It is true, too, that in sporadic phlegmonous erysipelas, as well as in the milder varieties of the disease, it can be received by inoculation, but I have never known an instance where the virus took effect so rapidly as in the epidemic referred to.

I have not occupied so much of your time to show the systemic character of this disease, unmindful that many eminent

surgeons insist in classing it with other blood-poison diseases, but rather to consider the principle upon which so many medical practitioners base its local treatment. In professional intercourse, I often observe that the topical applications, in whichever type or grade of the disease it may be, are the first therapeutic measures in use, while all other means are secondary. A favorite application to the inflamed part is iodine, either over the whole surface involved, or upon the surface adjacent to the reddened part, and sometimes covering the latter and normal colored skin adjoining.

The application of nitrate of silver just beyond the margin of the inflamed part is practised by some physicians, and so, too, applying it upon the border of the inflamed part. Others use evaporating lotions and emollients, and all these without regard to the milder or more intense grade of the disease, or to the portion of the body involved.

To the question why is the iodine or nitrate of silver applied, it is answered that it arrests directly the disease, and when applied upon the sound surface the disease will not extend beyond the painted skin. It is easily understood why in the simple cutaneous variety it may not extend beyond the colored margin, because of its natural termination. In my own experience with this treatment, the disease has continued as long as when it has not been used, and in the less simple class of cases it has protracted the disease, which has never resulted quite as near a resolution, but always in a tardier restoration to the normal tegumentary tissue, to say nothing of the liability of the implication of the deeper dermoid layers, with a corresponding constitutional disturbance. I am certain that while I faithfully followed the fashion of the treatment under discussion, the resolution of the disease looked for occurred rarely, and then less completely, especially in the examples attended with cuticular vesications, for at these points the desquamation will be deeper. An additional objection to the treatment of which we have spoken is, that it may complicate the primary form with cellulitis, which is a much graver condition than the spreading of the disease

in the skin, even should the latter traverse a large surface of the patient's body. In other words, the prognosis is more favorable when only the cutis is involved, for while the morbid process is in this tissue the cause will be sooner overcome than when diverted to deeper textures ill fitted for the elimination of the poison. During an endemic erysipelas in 1865 in which it oftener appeared locally upon the face and head, I find in my record of cases that of a lady æt. thirty years, of good previous health, attacked with the cutaneous form, the eruption appearing first upon the upper part of the abdomen, soon reaching quite around upon the back, extending downwards, and by the fifth day of the attack it had extended downwards upon the genitals, including the right gluteal region and upper part of the right thigh, accompanied with intense fever.

This was the patient of a neighboring physician, who had perseveringly applied the iodine treatment, and, while it had changed the color where applied, the subcellular tissue had become infiltrated and œdematous when, on the fifth day of the disease, I saw the patient with the attending physician. She was now delirious at times; temperature, 104 degrees; pulse, 120. There had been but little general treatment, the medical attendant firmly believing that the local treatment he was applying, to use his own phrase, would kill the disease. This treatment was discontinued; the reddened surface was kept covered with dry flour; the bowels, now constipated, were freely evacuated with a mercurial purge; sulph. quinine freely given; anodynes to allay the irritability; with brandy and milk as food and beverage. In three days the delirium was gone; the temperature had fallen to 101 degrees; pulse, 85. The eruption, which was livid at my first visit, was now of bright red hue, with well defined, slightly elevated edges,—in short, was now restored to a typical example of the spreading cutaneous form of the disease, or as it appeared primarily. Under this treatment, at the close of another week, it had spent its force; the desquamation of the cuticle in places had taken place, except where the skin had

been covered by the iodine, which was roughened, with deeper sloughing of the dermoid tissues.

Reference has been made to the case just cited, as one of a pretty large number in the writer's observations of the treatment in question, showing similar results.

I have spoken of examples of the cutaneous variety, in which the poison was so little as to exhaust itself in a few days, when restricted to the outer dermoid tissue; showing that these examples will recover with or without this local treatment, but more perfectly when the iodine or nitrate of silver has not been used. I now refer to two cases, showing that the site at which the local signs of the disease first appear bears directly upon the prognosis, when so much reliance is placed upon the topical treatment. These were both sporadic cases, occurring in two medical practitioners, both in the prime of life. In the earlier case, of Dr. P., in 1850, the local signs appeared first on the middle of the nose, extending laterally each way at the same rate upon the face, reaching the parotid regions and the anterior margin of the ears. The first local treatment was the application of nitrate of silver to the sound skin, just beyond the red margin, but the eruption appearing dimly beyond the cauterised surface, the iodine was substituted. This much of the history of the case I received from the attending surgeon on the sixth day of the eruption, and learned that the redness had not extended externally for the last forty hours, and that in the meantime delirium had come on. There was never any more extension of the cutaneous eruption. Coma supervened, the patient dying on the ninth day from the attack. It is recorded in my notes of the second case, of Dr. W., that the redness first appeared on the upper part of the nose, between the eyes, extending only on the right side of the face, reaching the ear and upwards as far as the edge of the hairy scalp. The treatment in this case consisted of the application of ice to the reddened part at first, and later by iodine over the entire inflamed surface. When this treatment had been continued five and a half days, the eruption nearly disappeared in front of the ear, when the

patient was pronounced better, the disease declining; but just now delirium of the violent type supervened.

The above history was given me by the medical attendant from the first attack, it being now the seventh day since the first local signs appeared. The eruption had ceased to extend for the last two days. Pulse was now 130; temperature, 105. On the ninth day the patient was in profound coma, and continued in this state until death, on the twelfth day of the disease.

Leaving the consideration of our clinical observations for a moment, it may well be asked, What is the *rationale* of the primary local treatment of this disease? I know it is said that the fever or general morbid disturbance is greater in proportion to the extent of the cutaneous inflammation, and that when the latter subsides convalescence begins. It has been affirmed in this paper that erysipelas is caused by poisoned blood; and, referring again to our clinical facts, we ask if they do not prove the reverse of the statement referred to above. My experience leads me to declare that only when the specific poison of the blood is well eliminated will the eruption permanently disappear. We have said the same cause exists in all grades of the disease. If this be true, then is it not irrational to depend only or partly upon local appliances, whether in the milder or graver forms of the disease?

It has been intimated that the site of the first eruption in erysipelas might influence its results. The history of the cases of the two physicians has been cited to illustrate a class of cases when subjected to the local treatment used in these instances, the disease appearing first externally, upon the nose, the cheeks, extending to either or both ears, and to the scalp textures. The contiguity of the meningeal and cerebral tissues allows these to be readily reached through the nose and ears under local appliances which might in the least divert or repel the tegumentary inflammation from the line in which it was spreading legitimately. The fatal cases in which the disease reached the meningeal textures by extension through the nose, seen by me, reached scarcely beyond

the base of the nose, the swelling being largely within the nares, occluding the latter. The cerebral symptoms appeared on the third and fourth days,—six of the recorded cases dying in from seven to nine days, having early delirium terminating in coma. An occasional occurrence of such a case as just noted would not warrant the declaration that such treatment was hazardous. But when a large number of such examples occur, and a large number of successful results follow the withholding of the forms of appliance here noticed, only protecting the inflamed skin with dry, fine wheat flour, with appropriate general treatment, we are justified in the opinion that the practice is dangerous.

In an example of the average facial cutaneous variety, which has spread over the face and one or both ears, by the fifth or sixth day of the eruption bright red, without cerebral symptoms, we may have a change of symptoms and character. Should the color become less bright and cease to advance, losing its well defined red margins, with pain in the head, dulness of mind, followed by delirium, rise of temperature, increased frequency of pulse, I should say it was no longer spreading external cutaneous inflammation, but erysipelas of the brain and its meninges.

When the disease comes on with the usual phenomena of the facial form, spreading steadily from the nose upon one or both sides of the face, over one or both ears; the redness bright; superficial desquamation of the cuticle only, where the eruption first appeared, spreading over the scalp; temperature, 100 degrees; pulse moderately hurried; slight headache; no special mind dulness nor delirium; though there should be some deafness for several days,—my prognosis would be favorable.

The upper and lower parts of the abdomen are other regions in which the prognosis would be more unfavorable, under the treatment of which we have been speaking, than when the disease appeared upon the trunk or extremity. The close proximity both to the parietal and intestinal peritoneal layer, as well as the mucous coat of the bowels, has

made these membranous tissues favorite sites for the spread of this disease, as verified by myself in several marked examples in autopsies of patients who had died of erysipelatous puerperal peritonitis.

The disease has, under the local treatment in question, disappeared from the surface, attacking the tissues within the abdomen in the nonpuerperal state, oftener in its epidemic or endemic form, but in no case of this kind have I seen it spread over the serous and mucous tissues so rapidly to a fatal termination, as in the puerperal patient.

The treatment of erysipelas, in all its types, should be directed to the removal of its cause, poisoned blood. Traumatic lesions only act as fortuitous events in determining the first localised external manifestation of the disease; but not invariably, as shown in the frequency of its first appearance in sound skin, at a greater or less distance from the part externally injured; so that in either case it is only evidence of fitness of the blood for giving specific character to the inflammation independent of the local lesion.

We have seen that primary local treatment has often complicated the disease and protracted its course, and, when applied to the disease in certain localities, diverted the same to internal structures of higher vital importance, resulting fatally. Our position is, that the application to the cutaneous inflamed surface of nitrate of silver, iodine, iron in any form, evaporants, fomentations, and emollients, does more harm than good, and often contributes to a recession of the disease to internal textures, making a much graver condition than when left to travel in an external tissue. Bearing in mind, in the choice of the treatment, that the cause of the disease is poisoned blood, and that in proportion to the intensity of the specific cause all the tissues are impaired in their normal nutrition, therefore the general treatment should first of all be sustaining; for only as the nutrition of the entire body is improved can there be any successful elimination of the poison or removal of the cause. The high temperature, with quick, firm pulse, which characterize an attack of phlegmonous ery-

sipelas in a previously vigorous patient, has frequently led the surgeon to give a prognosis and adopt a treatment which would be rational in traumatic inflammation free from the specific cause of erysipelas. In the latter, the high type of fever might continue for several days, and subside with the cessation of the inflammation, while in the former the fever tends to a low form, great early prostration being its characteristic, depending upon inflammation kept up by poisonous blood. It is this cause that rationally demands primary constitutional treatment, which should be promptly directed to sustaining the life powers of the patient, as far as possible, and so contribute to the removal of the cause by restoring a better nutrition to all the tissues; for elimination of the poison can only take place by the reinstatement of both the local and general normal nutritive functions.

In the majority of the severe cases of this disease, a mercurial purge is early indicated. Following free intestinal discharges, I have at once commenced the free use of brandy and milk, and when the milk could not be taken in this way, have continued the stimulants, and given the milk in good coffee with sugar freely, when other food could not be taken. In the meantime sulph. quinine should be given freely, alternating with muriated tinct. iron. Perseverance and tact will in most cases succeed in the introduction of food in some form sufficient to maintain the nutrient function. In all cases of the deeper varieties, whether primarily so, or rendered such by recession from local treatment or other cause, free early opening should be made for reasons previously given. During the purulent, ulcerous, and sloughing stages, I prefer only lime water and fine corn meal, in the form of an emollient, to all other local antiseptics.

Amputation should never be made while erysipelas is spreading. The resulting deformities, following repair of the lesions, will require operative procedure.

We conclude,—

First. That there are no tissues nor textures in the body that may not be invaded by erysipelas.

Second. That erysipelas is caused by specific poison of the blood, in all cases.

Third. In no instance of greater or lesser lesion of textures would erysipelatous inflammation appear in the wounded part or parts, but for the presence of poisonous blood.

Fourth. There is a difference in the products of the erysipelatous inflammation and the simple, non-specific, traumatic inflammation.

Fifth. In the former, the exudations of serum and lymph are of inferior quality, not susceptible of making fibro-cellular tissue, but tend often rapidly to degenerate into a purulent infiltrating material, which does not contain the normal pus corpuscle.

Sixth. In the latter, the earlier exudates resemble more nearly the normal serum and lymph, capable of organising into reparative tissue, and when suppuration does occur, the pus will be limited within a defined abscess wall, containing normal pus corpuscles, having all their physical properties.

Seventh. The non-local character of the disease is shown in numerous examples where the local signs of the disease appear remote from the injured part, as in fractures of the extremities as well as in lesions of the soft parts alone, the eruption first appearing upon the head and face, running its course without appearing in the site of the primary lesion.

Eighth. The poisonous state of the blood is well illustrated in the intensity of the virus of the suppurative and ulcerous *débris* of the disease, and in the rapidity of its communicating itself by inoculation.

Ninth. The much greater number of both small and large lesions which escape the disease is an argument against its local origin, but in favor of its systemic cause.

Tenth. It has too often occurred in the mild cutaneous form of the disease that the local application of nitrate of silver, iodine, and other external appliances popular with some surgeons, converted the case into a cellulitis, often a grave complication.

Eleventh. The results of local treatment in question as

witnessed by the writer, when applied to spreading erysipelas upon the face, the head, or the abdomen, should admonish against its use.

Twelfth. Never wait for pointing of an erysipelatous abscess, but open freely through the inflamed tissues, now of low vitality, that the infiltrating, vicious purulent material may be set at liberty.

Thirteenth. The general treatment should be directed to sustaining the patient and correcting both general and local nutrition, for only as the nutritive functions of all the tissues are improved can the cause of the disease be removed or the poison successfully eliminated.

DISCUSSION.

Dr. J. W. S. Gouley, of New York county, said that he regarded ordinary erysipelas as an acute lymphangitis, and the graver form as a superacute lymphangitis, and would summarise the few remarks he had to make by saying that this disease is an affection in which the main reliance of treatment is in certain remedies which tend to act upon the constitution at large; that while topical treatment should not be entirely rejected, it is of comparatively little value; that certain remedies, notably the chlorides, may be considered as almost specifics in ordinary non-traumatic erysipelas. Chloride of iron, given in large doses often repeated, tends to abort an attack of ordinary erysipelas. There was scarcely a physician in the room who would not corroborate the statement that his chief reliance was upon the administration of the tincture of the chloride of iron in erysipelas, and that his topical remedies were merely accessory. Perhaps in some cases other remedies might be added, but topical applications, as a class, did very little. He agreed with Dr. Hyde in this respect.

Dr. E. D. Ferguson, of Rensselaer county, understood the question to be, whether erysipelas was ever a local, as contrasted with a constitutional, disease. The fact that it is an infective malady; the fact that it is introduced from without; the fact that it is susceptible of inoculation,—seemed to show that it was primarily a local lesion, whatever it might subsequently become. He would not waste time in discussing theories, but wished to make the point that the system generally has a power of resistance, an ability to cope with poison introduced from without: up to a certain degree it may destroy this poison. In an ordinary case of erysipelas the ability of the system to contend with and overcome the poison led to a favorable issue. If the source of supply could be cut off, and the system were able to cope with the poison received into the general circulation, local therapeutics for

such a purpose would seem to be not only useful, but invaluable. If the source of supply could not be cut off, the patients, or a majority of them, would succumb. Where the site of implantation of the original poison was beyond the reach of local measures, or the means of absorption so free that it was rapidly taken into the circulation, as from the endometrium, the case was extremely difficult to contend with; but in ordinary cases of facial erysipelas, the course of which usually extends over a number of days, he believed that a decidedly favorable influence was exercised by the early application of muriated tincture of iron, causing the local processes to cease. His observations had convinced him that whenever he could secure a wrinkled condition of the tense, shining cuticular surface of the face, the local morbific process was controlled, and the absorption of the virus favorably affected. While conceding that in general the malady must be treated on a constitutional basis, he believed we should also keep in mind the local site, the point whence the poison is introduced into the system. Dr. Ferguson had noticed a great difference in the preparations of the muriated tincture of iron, some of which were less efficacious than others. He was satisfied of its benefit, having seen, in twenty-four hours after its early application, the shrivelling of the skin, with abatement of the fever, and the recovery of the patient within forty-eight hours.

Dr. John Cronyn, of Erie county, deemed local applications in idiopathic erysipelas as useless as the time spent in applying them was wasted; and he had seen all sorts of local medication applied. The latest remedy of this kind was lead, in the form of the scales which form upon the top of an old paint tub, which was strongly recommended by an eminent surgeon last summer. His own favorite local dressing was a mass of dry cotton batting, the soothing effect of which was extraordinary. With this he advised the internal administration of the muriated tincture of iron in doses of twenty or thirty drops, or even up to a drachm, according to the urgency of the case. He had seen in former years the circumscribing ring of nitrate of silver thoroughly cauterised, but the erysipelas paid no attention to it. The disease would not extend any more rapidly under the cotton, and there was the satisfaction of not disfiguring the patient.

The President called attention to the fact that litmus paper, applied to a moistened erysipelatous surface, gave an alkaline reaction, while it was well known that the normal reaction of the skin is acid. He had been struck some years ago by the experiments with reference to iron, which were repeated in Paris by Velpeau, who used the carbonate of iron and finally became rather adverse to it. The use of the muriated tincture, Dr. Moore believed, originated in Buffalo about twenty years ago, as the result of an accident. It was given for a local application, but the patient made a mistake and took large doses internally, with remarkable effect; and from this case the treatment ultimately spread over the world. The muriated tincture of iron is an acid preparation. In many parts of the country a very popular

remedy for erysipelas is a poultice of cranberries. Considering that the only thing common to these two remedies was their acidity, and concluding that this property might artificially restore the skin to what might be called its normal condition, Dr. Moore had adopted the plan of using a mild solution of vinegar as a local application. In the case of a girl who had periodical attacks of facial erysipelas about once in six weeks, and upon whom various local medication had been tried, he had used water acidulated with a little vinegar, and the patient volunteered the statement that its effect was pleasanter than that of any previous application.

A PECULIAR FOREIGN BODY IN THE STOMACH. CONCRETIONS OF HAIR, THREAD, ETC.

By W. Finder, M. D., of Rensselaer County.

Read November 16, 1886.

In March last I was in attendance upon a member of Mr. G.'s family, where my attention was called to a young woman, aged about twenty years, married, who was under Dr. C.'s care for a difficulty of the stomach. She had, prior to Dr. C.'s attendance, been under the treatment of a homœopath who had been treating her some five months without giving her any relief. As Dr. C. had been my preceptor, and being assured by the family that Dr. C. would have no objections, I consented to make a partial examination, with the following results: I found the patient in great pain, and as even the slightest movement increased the same, I made but a superficial examination. She was greatly emaciated, and through the thin walls of her abdomen a tumor could be distinctly felt. Its position extended from the epigastric, through the umbilical, to the hypogastric regions, rather more to the left of these, beginning at the left sternal portion of the ribs, and ending about two inches above the brim of the pelvis. Under the touch of the fingers this mass felt very hard. The patient was unable to take any nourishment as there was a constant retching, and these efforts to eject something were unsuccessful. The diagnosis of her case was that in all probability the tumor was a cancerous growth. She lived about ten or twelve days after this examination, gradually growing weaker, and finally died from exhaustion due to starvation. Through the efforts of Dr. C., I was allowed to make a *post-mortem* examination forty hours after her death. The external appearance of her body showed nothing but emaciation; otherwise, normal. I made the usual incision in

the median line, and found all the organs in a healthy state except the stomach; this was displaced by the weight within, and instead of being transverse to the axis of the body, it was parallel to it. There were several spots of congestion to be seen upon its surface. But the interesting part was the opening of this organ. Even beforehand we could feel something hard and loose within. As I cut through the walls of the stomach my knife touched something which was firm and hard, and there appeared in the line of the incision two masses of hair. These masses of hair had caused ulceration of the walls of the stomach in two places, exposing the muscular layers, and very nearly perforating the same. Their combined weight on removal was sixteen ounces, but as they were then saturated with the juices of the stomach, their weight was more than it now is. They are made up of hair, both human and from the horse, also sewing threads of various kinds, grasses, and woody fibre of plants. In form the larger mass had assumed the shape of the stomach, measuring on its greatest curvature nineteen centimetres, or seven and a half inches; on the lesser, eleven centimetres, or about four and a third inches. Its circumference is eighteen centimetres in its largest part, or about seven and a quarter inches. The smaller mass is more circular in shape, and measures on its greatest circumference thirteen centimetres, or five and an eighth inches. They are entirely composed throughout of the same structure. They nearly filled the entire stomach. It is to be greatly regretted that an operation was not undertaken to explore, if for no other reason. A few days before her death she made the statement that it had been her custom to chew threads and hair, which habit she formed when a child while under the care of a stepmother who did not at times give her sufficient food to appease hunger. Had a knowledge of this habit been obtained a sufficient time before death, and an operation performed, we might in all probability have added another to the successful list of abdominal surgery in America. From the position of the displaced organ in the median, instead of the trans-

verse line, it would have greatly aided any attempt at removal. This would not have been a new undertaking, for, by referring to the London "Lancet" of January 9, 1886, we find recorded a case of gastrostomy for the removal of a large mass of hair from the stomach by J. Knowsley Thornton, M. B., C. M. This operation was done May 6, 1884, and was successful, even though an accident occurred, that of leaving a sponge in the stomach, and a succeeding operation for the removal of the same. The mass which Thornton removed weighed two pounds, and was made up entirely of matted hair. In 1883 Dr. Schönborn, of Königsberg, operated successfully on a case of this kind, removing a mass that weighed nine or ten ounces. Both of these operations were done under thorough antiseptic measures. So far as is known, these two are the only successful cases reported: in these cases the patients a year later reported themselves well. At the end of Thornton's paper describing his case, he gives a record of various cases of this kind published, where death occurred from these foreign bodies having caused ulceration, followed by perforation, due to their irritating character. Bandamant published a case in the "Journal de Medicine" (vol. 11, p. 507, 1779), the patient being a male who died in great suffering at the age of sixteen. In 1841 Pollock published in the "Pathological Transactions" (p. 327) the case of a girl who died aged eighteen, with a mass of hair in her stomach which measured six by three and three fourths inches, and a smaller one in the duodenum. Thornton also speaks of a case published by George May, Jr., in 1865, the records of which he could not find. Ritchie published one in the "Edinburgh Monthly Journal" (vol. IX); patient a female, age twenty-one; the mass weighed 21 ounces. Russel gave an account of one in the "Medical Times" (1869) which Thornton thinks the most remarkable of all. The woman died, age thirty-one, after an abortion, and a matted mass of hair was found in her stomach weighing four pounds and seven ounces; this weight had displaced her stomach, dragging the pylorus down into the pelvis. This case had been growing seventeen years, yet

she had not suffered much from its presence, and there was only a slight ulcer in the stomach. Inman published, in the same journal, a short note of a case which he had heard of in the practice of Dickinson, of Liverpool, the patient, also a female, dying at the age of thirty-four with symptoms of obstruction. In the same year (1869) Best recorded a case in the "British Medical Journal," the patient, again a female, being thirty when she died, and the mass weighed thirty ounces. A number of deaths from this cause have been reported in Germany, but I have been unable to find a record of them. Thornton remarks that it is obvious from these records that if a case be left alone it will prove fatal, and to operate successfully brings another triumph for abdominal surgery. Yet in Thornton's successful case, he knew with what he had to deal, the patient bringing him a small concretion of hair and fæcal matter which had passed her. But in most of these cases this does not occur, and the patients evade all questioning as to their habits until too late for an operation. We should, nevertheless, try to discover all of these eccentricities.

When we look over the ages of these patients who have died from having these masses in their stomachs, we find that they are younger as a rule than those in whom death has occurred from cancer in this and adjoining organs. These patients would bear an operation well, as the parts, from the weight and constant irritation of these masses, are already prepared; for inflammation of the peritonæal surfaces, which have been in constant agitation, is not so apt to follow.

DISCUSSION.

Dr. C. A. Leale, of New York county, hoped that the specimen shown by Dr. Finder would be kept for the museum of the Association. He had noticed in the Hunterian museum several similar specimens, but none so large as this. He had also visited Ponjo, the great gorilla, which died from the same cause. At the autopsy, there was found a mass of hair, etc., which the animal had seized and swallowed while being caressed by the ladies.

Dr. Finder replied that he had already promised to deposit the specimen in the College of Physicians and Surgeons, where it would be accessible to all the profession.

REPORT OF TWO CASES OF MORPHIA AND COCAINE HABIT.

By Judson B. Andrews, M. D., of Erie County.

November 16, 1886.

The hydro-chlorate of cocaine is a comparatively new drug, and but few cases of its use as a habit for its constitutional effects have been reported. It is on this account, and because of the importance which this habit assumes, that I deem it proper to take the time of the Association in giving the details of cases which have fallen under my observation.

The report is headed "Cases of Morphia and Cocaine Habit;" this is done advisedly, as I have no personal knowledge of the use of cocaine as a habit except in conjunction with, or as a sequel to, that of morphia.

The experience of the profession is, I think, that cocaine is generally employed as a substitute for morphia by those endeavoring to overcome the use of this drug. It is largely to the action of the profession and to the writings in the medical journals that we must attribute the responsibility of the formation of this unfortunate habit. Another effect worthy of notice is, that medical men seem to have become victims of the use of this drug in greater proportion than any other class. We might perhaps expect this, from the tendency of physicians to experiment in their own persons with the various therapeutic agents as they are presented to their notice.

The first case I have to report is that of a professional man, L. C., who had acquired the habit of taking morphia by hypodermic injections. This was begun about three years ago, without any valid excuse, but, as the patient says, as a

mere experiment. He was in the active practice of his profession, suffering at times from neuralgia, and using tobacco by smoking, though not to an excessive degree.

He began the use of morphia with small doses of a fraction of a grain, and in a few months had reached the amount of five grains per day. At this time he became somewhat run down, and suffered from what was called nervous prostration, and during this period the amount of morphia was reduced. After a few weeks, having recovered his general health, he resorted again to morphia injections, and in a few months was using fifteen grains per day. He continued, at times increasing and again diminishing the dose, until he reached an average limit of thirty grains per diem. In July, 1885, noticing the statement of some of the journals that cocaine was an antidote for morphia, he began experimenting with this drug.

On the 9th of July he took three injections of morphia and two injections of cocaine, each one half grain; on the 10th took four injections of cocaine, at 8:15, 11:30 A. M., 12:30 and 3 P. M.,—in all seven grains and a quarter; had pain in stomach and bowels, was nervous and sleepless.

On the 11th, six grains of morphia at 12:30 A. M., another grain at 1:30, and another at 4:30 in the morning; after three and a half hours' sleep, injections of cocaine at 8, 10, and 11:15 A. M., when griping commenced, with trembling and other nervous symptoms; then took four grains of morphia, which relieved griping and induced general sensation of well-being. At noon, three fourths of a grain of cocaine; the same dose at 12:30, and again at 1:15. At 1:40 took a grain of morphia, at 1:50 two grains, at 2:15 two grains; was very nervous and unstrung. At 3 P. M. took a quarter of a grain of cocaine; at 6, another quarter with half a grain of morphia; at 8:30, a half grain of cocaine. His own note reads,—"I reduced the cocaine, and when the griping occurred I used a small injection of morphia; think I used too much yesterday, thus intensifying my symptoms." At 11:30 P. M. took a half grain each of cocaine and morphia.

After sleeping soundly from about 1 A. M. to 8:30 on the morning of the 12th, awakened suddenly, feeling very weak and fatigued, and shedding tears; immediately injected a grain of cocaine and a grain and a half of morphia; at 9:30 A. M., another grain of cocaine and two grains of morphia; at 10:30, another half grain of cocaine; at 1:30 P. M., another half grain; at 2, a quarter of a grain; at 2:30, a half grain of cocaine and a grain of morphia; at 3:30, a quarter grain of cocaine and a grain of morphia; at 6, a quarter grain of cocaine and a grain of morphia.

On the 13th, at 2:15 A. M. took a half grain of cocaine and a grain of morphia; at 9, a half grain of cocaine and two grains of morphia; at 2:15, a grain and a quarter of cocaine; and at 3:15, a grain of morphia.

This ends the patient's account of the first few days of the use of the drug. He informed me that immediately following the time noted in the diary, he passed into a condition of sleeplessness which lasted for three nights. That in this interval he took very large doses of both morphia and cocaine, which, however, seemed only to increase his sleeplessness and restless state. In despair he turned to bromide of potash for relief, determined to gain sleep by taking a sufficient quantity of this drug. In one night he took two ounces, or 960 grains. He slept but little, and passed into a condition of thorough bromism, in which he was nauseated, had cold extremities, feeble pulse, and became almost entirely unconscious, having simply the recollection of the physicians working over him to restore him to life and consciousness.

From this time he continued the use of morphia and cocaine according to circumstances. There were times when he was unable to purchase the cocaine, and resorted to the morphia alone. The highest dose of morphia which he reached was thirty grains per day, by hypodermic injection, and he assures me that he increased the cocaine to fifty grains, also taken hypodermically.

On admission to the asylum he was thin, eyes sunken, nervous, restless, and excited. His limbs were marked by cica-

trices of abscesses produced by injections. He was sleeping poorly, had much disturbance of stomach, was able to retain but little food, and his whole condition was deplorable.

On the night of his admission, as he was more or less under the influence of the drug, he was given no medicine, but the watch supplied him with milk during the night. The next day he was given small doses of belladonna, and for nourishment hot beef tea and plenty of milk, and during the twenty-four hours two hypodermic injections of morphia of about one grain each. On the second day he complained of nausea and vomiting, which continued some three days. On the 23d of March he was able to be up and dressed, nausea and vomiting had stopped, appetite was better, he felt stronger, and showed an improvement in flesh and color. For the three days from the 20th to the 23d of March he received an injection of one half grain of morphia three times a day. This was gradually discontinued, and on the 6th of April the morphia was entirely removed. It was, however, subsequently repeated for two days to the extent of one eighth of a grain twice a day, on account of pain and cramps.

On the 12th of April he was weighed, and again on the 22d, and gained seven pounds in the ten days. No cocaine was given during his treatment. The greatest reliance was placed upon sufficient nourishing food, beef tea, hot and highly seasoned soup, milk, and cod liver oil emulsion, made with peptonized beef.

The mental symptoms were hallucinations of hearing, irascibility and irritability of temper, and there was a marked change in his feelings towards his family. He had no appreciation of his real condition, denied that there was any mental disturbance, and at times became abusive in speech. He improved steadily in flesh, strength, and color, and in two months gained about thirty pounds. The more active mental symptoms subsided, but while he did not give expression to his hallucinations of hearing, from his conduct it was evident that they still existed.

On account of his general improvement he was entrusted

with a parole, and for two months before leaving the asylum occupied himself in out-door work.

He frequently conversed with me in regard to himself, and said that in addition to the stimulant effect indicated by increased mental activity, and by the feeling of increased strength and sense of well-being, he noted especially intensified acuteness of the sense of hearing, and also complained of disturbance of the stomach, nausea, vomiting, and cramps. These were the prominent symptoms detailed as the result of cocaine. These, too, correspond with those given by other observers of the effects of cocaine on the central nervous system.

Dr. D. R. Brower, in the "Journal of the American Medical Association" of Jan. 16, 1886, says,—"It is one of the most certain and agreeable of all cerebral stimulants; it gives a sense of well-being, freedom from care, and a pleasant mental exaltation." And farther, when the drug is taken in large doses, of from two to ten grains of the alkaloid, there is produced tinnitus aurium, photophobia, illusions, hallucinations, great loquacity, and a marked tendency of the mind to exaggeration and misrepresentation.

Of the effects upon the physical system, there is disturbance of the digestive functions, the production of anorexia, nausea, muscular cramps, and tremors. These correspond in great part with the changes produced in the patients whose histories are given.

Another case that has fallen under my observation, of the same general character, was marked by sleeplessness, restlessness, increased mental activity, manifesting a tendency to falsehood and exaggeration, hallucinations of sight and hearing, irritation of the stomach, muscular cramps, with marked disturbance of the bowels.

Many of these symptoms are also those of the morphia habit, and as in both of these cases the cocaine was taken as a relief from this habit, it is difficult to say how many of them are the result of the cocaine, and how many of the morphia. While there is no doubt that its use makes the

withdrawal of morphia easier, it is, I believe, placing within the reach of the patient a more dangerous agent than either morphia or alcohol.

Dr. Shaw, of St. Louis, in writing upon this subject, states that it is "an ignis fatuus, leading its captives to almost certain and irretrievable ruin, morally, mentally, socially, and financially; that it produces insanity in a remarkably short time, if used continuously and in increased doses, by producing hyperæmia of the brain." He sums up as follows: "Let us for a moment review some of the mental symptoms due to its use in considerable quantity. These are sleeplessness, carelessness, forgetfulness, emotional mobility, suspicions, extravagant ideas, claims of mental superiority, physical prowess, in short, ideas of grandeur; attacks of mental excitement, alternating with melancholia."

While I am not prepared to adopt the whole of the writer's statements, there is still enough of truth in them to warrant the utmost caution on our part in recommending the constitutional use of this drug in the hope of overcoming either the alcohol or the opium habit.

The history of the second case has been kindly prepared by the patient. It is so graphic and so truthful that I feel no apology is needed for its presentation to the Association.

At your request I have prepared for you a brief history of my experience with the morphia and cocaine habit.

For a number of years I have been employed in journalistic and literary work, and a little over a year ago began to suffer the consequences of over-work. I am of an extremely nervous temperament, and have been ever since boyhood the victim of an intermittent sort of dyspepsia, if I may use the expression. I suffered acutely from this disorder in the spring of 1885, and for a month or more I saw the pleasures of life gradually fade away, in little knots of three or four, until existence finally became a nuisance to me, and I a burden to my friends. I was constantly haunted by fears of a large and disagreeable Something,—none the less fearful because of its indefiniteness,—and found myself at last baptized, if not quite confirmed, into chronic hypochondriacal melancholia.

From this abnormal condition I was aroused one day by a real danger, which affected my reason through my pocket-book. A cherished position I was occupying seemed anxious to slip away from me, and the effort I put

forth to maintain my hold on it drove all imaginary ills entirely out of my mind. For a time I was hopeful once more and determined, but within a few weeks I tired of spurting, and felt the need of some artificial strength to carry me on at the rate I was going.

It was then I began using—at first frugally, but later more generously,—alcoholic beverages for that purpose. This was kept up until early in December, when the accident occurred which makes this history possible.

The accident referred to was the injury of the alveolar process in the removal of a tooth. To relieve the pain of this, morphia was administered by injection by a physician. The use of it for a month after my first injection of the drug was not attributable to any desire for it on my part, and it was not until two months later that I realised that I was a victim to the habit. Two days after that realisation came to me I placed myself under the care of a physician for treatment, which failed, I regret to say, more from my weakness than from any other cause. From that time until I entered the asylum I was constantly endeavoring, sometimes with and sometimes without medical aid, to sever the chains which bound me.

I had been taking morphia perhaps for six or seven weeks when I was given my first injection of cocaine. Cocaine alone made me deathly ill, as I afterward learned from experience. But this dose was taken in conjunction with one of equal size of morphia (I think they were a grain each). Within a few minutes I experienced the most exhilarating sensations I have ever known, before or since. My brain was stimulated as much more powerfully than if by alcohol as whiskey is stronger than diluted sugar-water. And, too, the intoxication had none of the unpleasantness of ordinary drunkenness. My tongue took on the most extraordinary activity, but speedy as was its gait my thoughts kept far in advance of it. I never enjoyed talking before as it can be enjoyed, and the greatest possible calamity which could have befallen me at that moment would have been the loss of speech. I fairly revelled in the vernacular for a half hour or more. My nerves, too, were tense, and I felt the physical strength of a trained athlete after his morning exercise. I cannot conceive of any one feeling more exquisite pleasure than I did during that half hour. I would n't then have changed places with any one on earth. But at the end of this brief period of ecstasy I fell almost instantly into the depth of a despondency as disheartening as the former had been ravishing. From this horrible gloom I could only be roused by another dose of morphia. Within five minutes after the antidotal dose I was in my usual spirits, and the delight of the first sensations of cocaine were gone, never to be experienced in that degree again. I did not touch cocaine again for a week or more, although the morning after my first experience I felt no disagreeable effects therefrom.

My second experience was in the nature of an experiment, to ascertain, if possible, to what extent this mental activity could be utilised in writing. On the night in question I was plied with alternate doses of cocaine and

morphia for six hours, while I wrote as much matter as would ordinarily have taken me two days to compose, and it was all pronounced by the editor of the publication who accepted it far better than any similar work I had ever done. The next morning I felt drowsy for awhile, but paid no attention to that symptom, thinking it was caused by lack of sleep. I learned later on that this is one of the most characteristic features of this habit, and the time came very soon afterward when I could not keep awake to eat the light breakfast my system needed without first taking a dose of this terrible drug; and I have often fallen asleep at my desk after going an hour without an injection.

When I began the use of cocaine experimentally, as I have related, and occasionally only, I weighed 165 pounds, or thereabouts. I had lost very little from the use of morphia, which up to the limit of three grains a day seemed to improve my health, as it most certainly did my spirits. I had stopped the use of liquor directly I took my first injection. But from the moment I began taking cocaine regularly, which was about the middle of May or first of June, I had dropped in weight to 150 pounds, and my color was rapidly fading into the sallow yellow of the old pocket-book tint. My appetite, previously excellent, had lost its vigor to such an extent that I never ate meat nor vegetables, and cared for nothing save sweets and milk. I often lived on one meal a day, such as it was, and on one or two occasions even dispensed with that. At this stage of my affliction I sometimes drank egg-noggs or milk punches, to give me sustenance in a form which was least unpalatable, as solid food was often objectionable to me to the point of nausea. But however much I drank, I never in one single instance experienced any feeling of intoxication resulting therefrom.

I seemed to have solved the secret of permanent sobriety under disadvantageous circumstances. The latter part of June found me taking from ten to fifteen grains of morphia and cocaine hypodermically each day. Some days I would take twenty-five grains of each, the cocaine antidoting the poisonous effects of the other. After a day of such excess, I suffered from wakefulness all night. I don't know as I ought to call it suffering, though, for it was only the last week or so before I entered the hospital, on the 16th of August, that I really suffered at night, and then only from apprehensions which never were realised. But I will come to that later on.

I think it was early in June that I first noticed my inability to do my regular work as I had been in the habit of doing it, although I was not totally disabled until the last few days in July. I found that while I could invent more rapidly than ever before, and composition came to me most readily, I was annoyed by the very ease with which I worked. For instance, in writing a story I often spent from five to ten hours upon the introduction alone, and then did not reach the second paragraph. Each paragraph suggested another one in its place, and that often suggested an entirely different story. I had reached the first stage of incoherency, which never showed

itself, however, in my talk. Some unfinished articles and unmailed letters which I have preserved are so incoherent in some parts, and wildly exaggerated in others, as to be nearly unintelligible. Yet, during this period, I did write some articles that were published, and showed very little signs of mental weakness of the sort I have described.

About this time I fell prey to the most excruciating nervousness. I could not allow a half hour of the day or night to pass without taking an injection, and these repeated doses only added to, instead of decreasing, my misery. Time flew by without leaving any token of its flight. Night became almost the same as day; one hour seemed the same as another. I carried in my syringe case a large number of small brass wires to keep the needle free from rust, and a small pocket hone to sharpen my needle on. I used to drop these wires frequently, and in searching for them I fell into the habit of keeping my eyes cast on the floor. This grew upon me to such an extent that I often found myself searching the carpets of friends' houses for wires that were safely stowed away in my pocket. I have often spent the whole night sharpening needles and cleaning them, and felt no fatigue whatever from the exercise. Yet when once I left my rooms for the street I lost this desire to trifle, and, excepting my appearance, excitability, and talkativeness, I believe I did not show to the casual observer any marked signs of my malady, for such it had become. The latter part of my experience was excessively painful. I suffered almost constantly from depression, which nothing within my power could remove. At times I have been on the verge of suicide, but never really advanced far enough in that direction to actually begin preparations for self-destruction, though I oftentimes would have gladly welcomed death in any other form.

Through it all, however, I never once gave up hope. I always felt sure, whatever opinion my friends might express to me, that I would some time be cured. That, I think, was my salvation. How much longer it would have been before this sanguinity would have left me, as my common-sense had done, I do not know, but judging from my condition when I entered the hospital, I am certain it would have been very soon.

I never had what might be strictly called hallucinations, although I missed the phenomena by a very narrow distance. I grew suspicious before going to the institution, and fancied every person I met knew of my disease. I did not confine my suspicions to this limit, either. After retiring at night, I imagined some one was coming into my room. I don't think I should have been alarmed if he had done so, but the suspense, the watching for the transom to open, the waiting through the long hours for the window blind to turn, were all but maddening. I never saw evidences of any attempt to make this entrance, but I could not rid my mind of the fear that it was just about to occur. This cowardice, for such it was, lasted up to the time, and perhaps a day or so after, I became your patient.

During the time I was using cocaine, a period of not more than four

months altogether, I frequently stopped it for days together. The only inconvenience in such cases was my extreme drowsiness. I have slept for forty hours without awakening; then the pain of being so long without morphia would bring me most speedily to my senses. It was easy to stop cocaine at all times, save for a slight depression which would follow the renunciation, and this sleepiness I have just mentioned.

When I left my home preparatory to going under your care, I set about reducing my doses at once. I was then taking thirty grains of each a day, a drachm bottle of sulphate of morphia lasting me just two days. In five days after beginning the reduction, which I undertook alone, I had reached five grains of cocaine and seven of morphia. Therefore, when I became an inmate of the asylum, I had attained something of my normal condition. After you assumed control of my treatment I never took another drop of cocaine, and, to my knowledge, I did not suffer even the customary drowsiness or depression from that stoppage. Perhaps this may have been caused by the inconvenience of going without my usual amount of morphia, which drove all smaller inconveniences out of my mind.

I was stopped from morphia in one month from the day I entered the hospital, and discharged cured a month later. Besides suffering from indigestion slightly, and feeling a slight disinclination to do much literary work, I can say to-day, exactly one month from the day of my discharge, that I am as well as I have ever been. I weigh 150 pounds, and am steadily gaining in flesh.

I have regained my customary color, and feel as comfortable and contented as any man can feel who can't help but recollect, every once in a while, that only three months ago he was on the verge of something worse than death—far worse.

To you, Dr. A. W. Hurd, your assistant, and Dr. H. R. Hopkins, of Buffalo, who advised me to place myself under your care, and gave me during my entire treatment his personal advice and aid, I owe, my dear doctor, my manhood; and it is with the most heartfelt gratitude that I subscribe myself your affectionate

EX-PATIENT.

MEDICINE AND PHARMACY ABROAD.

By Edward R. Squibb, M. D., of King's County.

November 16, 1886.

In the course of an European excursion of nearly eight months' duration, the writer gave a good deal of superficial, general attention to what could be seen without special investigation of the condition of the arts of medicine and pharmacy abroad, as compared with what might be seen by a traveller under similar circumstances in this country, and the results may possibly be worth recording.

The observations embraced many of the principal cities of Europe, from Trondhjem at the north, to Naples at the south, and Moscow at the east, and included, in the order in which they were visited, Ireland, Scotland, England, Denmark, Norway, Sweden, Finland, Russia, Germany, Austria, Italy, Switzerland, France, Holland, and Belgium.

In order to give an idea of the looseness and inaccuracy with which the observations were made, it must be stated that in visiting one or more of the principal cities of these nations it was a prominent object to see as much as possible of the outlying streets and the people who inhabited them, and in noticing their shops and their occupations, to compare these with each other and with the cosmopolitan character of the principal or central streets, which latter are much alike in all the large cities. For example, it was very interesting to notice the number of, and the proportion between, the butcher, baker, and vegetable markets and shops in one group; the fruit and flower shops for another group; the tobacco, beer, wine, and candy shops for another group,—and so on;—and, as being of especial interest, the number of doctors' signs, and of pharmacies.

In passing, it may be noticed that the principal streets and the principal hotels and their inhabitants, in all the very large cities, are not only much alike in appearance, but, probably from being in the direct line of such an enormous amount of travel, they are really cosmopolitan, having lost much of their nationality, and become in one sense international, especially in the dress, manners, and language of the people. The French, English, and German languages are so common in these special localities as to approach universality, so that no traveller having any one of the three is ever long at any great disadvantage. In the hotels and principal shops especially these languages are very common, and in the porter's lodge or breakfast-room one would hardly know whether he was in Trondhjem, St. Petersburg, Venice, or Naples. But often, as near as within two or three streets of these centres of intermingled nationality, localities are reached which offer a striking contrast of special nationality; but the contrast is in faces, habits, manners, and language of the people, and in their houses and shops, rather than in dress. The distinguishing nationality of costume is rapidly disappearing everywhere, and is hardly noticeable in many of the cities, so that the clothing stores throughout civilised Europe appear to be more nearly alike than those of any other merchandise.

As a broad generalisation, there seemed to be fewer butcher shops, more bakeries and vegetable shops and markets, more fruit and flower shops, fewer wine and beer shops, and much fewer candy shops than in this country.

But in the special interest of medicine and pharmacy the contrast was far greater than in anything else. In all the nations of civilised Europe this interest is recognised as being of superior importance, and is under more or less of legal and moral restraint and control. In no nation—not even Great Britain—is this interest so nearly a free trade as in this country. The theory is, that all governments—that of this country included—have laws for the protection of the people against the pretensions and deceptions of quackery, and deficient knowledge and skill in the important art of medicine;

but certainly in no nation has this art become debased so nearly to the level of the money-making trades as in this country; and Great Britain seems to rank next in this unenviable debasement, while Denmark and Sweden seem really to have the interest under the best practical control. Not that the science of medicine is as advanced in these nations as in Germany, for example, nor the art practised with so high a degree of knowledge and skill as in England and in this country, but it is simply under better control, and therefore the people's interests in it are better protected.

In counting the physicians' offices in the large European cities, and trying to compare the numbers with those of Boston, New York, Philadelphia, and Baltimore, it seemed to the writer that in the latter cities the numbers were more than double. In the European cities, street after street of those occupied as residences would be traversed with but one or two doctors' signs, or with none at all. And among the few signs the number of comparatively new ones was very small indeed. From occasional glimpses into these offices, or at least into the front rooms through open windows, they were judged to be very plainly furnished, hardly what would be called comfortable, and never luxurious, whilst the absence of any degree of ostentatious display marked the infrequency of the quackish class. The number of physicians' vehicles that could be in any way identified as such in the streets during the customary hours for visits was so small that a pretty close scrutiny was needed to find them at all. Indeed, the conclusion was reached that in those cities physicians must generally walk or use public conveyances, and this conclusion was strengthened by seeing that visits to patients at hotels were commonly made on foot.

There is no such thing as recognising these physicians as a professional class, and the very few seen that were identified by circumstances were very plain and simple in dress and manner, and in dignity of bearing hardly supported the importance of the profession. Some indication of their popularity as a class, or of the general impression of their utility

to the public, was sought for in vain; nor was it practicable to ascertain how far their counsels extended among the masses, how far they were accepted, or how far their instructions were carried out; but from slight indications it is supposed that their standing and influence are greater than in this country. And this should be true if for no other reason than that their art is practically free from the debasing competition of advertising quackery and nostrums.

The pharmacies of European cities offer a much more striking contrast to those of this country. In England and Ireland they appear to be similar in character, but perceptibly less numerous. In Scotland they are less conspicuous and less numerous than in England, and in France the character and number are still farther modified for the better. But it is in other European cities that the contrast becomes most marked. As a broad generalisation, it may be that in number they reach one third of the number in this county, but probably not over one fourth; but the contrast in character and appearance is still more remarkable than in number. Never near together, they are commonly in prominent locations, and not uncommonly appear to occupy the whole of a small building. No show window nor colored bottles nor any other form of display. Windows of ordinary size and character, and used only to admit light, except that they may occasionally have one or two growing medicinal plants. No glaring nor large signs anywhere, but generally a small one over the entrance door with the name of the proprietor, and the word "Apotheke." Inside the door is a clean, clear space occupied by a few chairs. Then a very simple counter, without show-cases and without furniture, or with one or two scales of large size. Behind the counter, and with their backs toward it, are from one to four clerks, each with a prescription scale and measures, engaged in putting up prescriptions or orders. Beside these, the proprietor or his representative appears to be engaged in receiving those who enter, and in superintending the work of the clerks. As a general rule, males who enter remove their hats as soon as the door is passed, and remain

uncovered until they are served and go out. In many visits to such pharmacies very few verbal messages were noticed, almost all messengers bringing written orders or prescriptions, though they often received only a single article. The proprietor or disengaged clerk receives the order, and invites the bearer of it to sit down; and not once was a messenger seen to sit down without being invited. Often not a word was spoken until the order was supplied and presented, when the clerk would mention the price, or the messenger would ask for it, and as a rule conversation seemed to be avoided. The clerks were generally of mature age, intelligent looking, personally clean, and well though very plainly dressed. The furniture and apparatus were clean and in good order, but clumsy, and there was a notable absence of gaudy over-gilt labels and ostentatious decoration of anything, everything being plain and substantial even to ugliness and clumsiness. Not a patent medicine card nor any proprietary article in sight, and no perfumery, fancy goods, soaps, cigars, wines, waters, nor soda fountain in sight. In short, the whole pervading tone was of quiet, earnest, and accurate work of a high order, carefully done; and this tone gave a dignity and an honorable rank to the whole place. The writer commonly made an errand of buying a few grammes each of ether, chloroform, and carbolic acid, articles the quality of which could be fairly judged by their sensible properties, and such purchases gave access to the pharmacies, and opportunity to observe the work. The first of these orders was given in Copenhagen verbally through a clumsy mixture of bad French and worse Latin. The clerk, a very young man, very respectfully suggested English, in an excellent specimen of that tongue, and never after was the writer again caught in the same way; and this led to the observation that, with very few exceptions, English was spoken and understood in the pharmacies of Europe.

The articles bought were often of very good quality, and never of bad quality, and were uniformly dispensed quickly and neatly, but never elegantly.

The general conclusions reached by these observations were, that in the United States there is a class of physicians who in ability, knowledge, and skill in the application of their art are not excelled by any similar class in Europe, but that in this country this class is so diluted and obscured by the much larger class with superior pretensions and inferior knowledge and skill, who keep themselves so prominently before the public as to overshadow the better class and give a superficial appearance of inferiority to the profession as a whole.

By the uncontrolled multiplication of graduates of medicine here the profession is overcrowded with indifferently educated men far beyond the demand or necessity for their services, and far beyond the proportionate number in any other nation. If this struggling surplusage and its influences be subtracted, the profession of medicine in this country is probably no where excelled.

The condition of pharmacy in the United States appears to be fairly parallel to that of medicine. In no country are there any better medical supplies than in this, and in none are these better managed and dispensed for use than in this. Indeed, with respect to both quality and management, there is a strong probability that there is a superiority here. But there is certainly no country more abundantly supplied with bad drugs, nor with the ability and skill to put them in the place of good ones. In most European countries pharmacy is so controlled that it is not very easy to get bad medical supplies, while in this country, with pharmacy almost uncontrolled, it seems not very easy to get good ones. With good and bad material in equal abundance, the pharmaceutical ability and skill which constitute good pharmacy in the one case make very bad pharmacy in the other, and against this last the European control measurably protects European physicians and their patients. Here there is probably better pharmacy and more of it than there; but here there is an enormous amount of bad pharmacy to contrast with a very little there.

THE RELATIONS OF PHYSICIANS TO THEIR MEDICAL SUPPLIES.

By Edward R. Squibb, M. D., of Kings County.

November 16, 1886.

There is a large number of physicians who, for both therapeutics and materia medica, depend largely, if not mainly, upon the travelling salesmen and their pamphlets and lists, and on the advertising pages of the medical journals. The relations of this class to their supplies are most simple and most favorable. They come in very direct and very close contact with the sources of their supplies, and have much less trouble than any other class of artisans. With others smarter, more ingenious, and more plausible than they to think for them, and then to apply vigorous mercantile principles to their wants thus suggested for them, they have the least practicable amount of thinking for themselves to do in regard to their remedies and the novelties of the day, and therefore, as they argue, more time to think of and study out their cases. To this class the ready-made prescriptions in the form of beautifully colored and coated pills, or palatable solutions and mixtures, do not appeal simply as gratifying various degrees of laziness, or indisposition to think for themselves, but they present themselves as true labor-saving devices, skilfully prepared for the overworked ability to use them, and as giving more time for the higher and more scientific reaches of the profession. Perfunctory routine in the observation of cases soon leads to a routine practice of treatment, and then what can be more convenient or more desirable than ready-made supplies in an attractive form, easily accessible? For example, the fashionable "nervous prostration" being observed, what can be more simple or more easy than to order

Smith's "coated pills of valerian, quinine, iron, and zinc, No. 1," to be taken three times a day, and a draught of Jones's Effervescent Salts of Bromide of Potassium, Caffeine, and and Cocaine in solution at bed-time? There are few difficulties in this practice of medicine, and none in the way of medical supplies, for the physician himself may easily have a supply of the medicines at ten per cent. off from "list prices," or may send for them to the nearest town or village, where a pharmacist or a general store will have them at a cost of twenty-five per cent. off from "list prices." But should the travelling salesman for that district have been a fifteen hundred dollars a year man, instead of a man at three thousand dollars, he may not have succeeded in leaving the articles in that town or village. Then, in twenty-four hours, by telegraph and express, they can be obtained from the nearest wholesale druggist or jobber, who buys them of the manufacturers at ten per cent. less than the twenty-five per cent. off price of the town or village dealer. Whether this last ten per cent. discount is really "the bottom" few people know, but probably it is not.

If the patient see that Smith's pills "worked well," he might want them again, or recommend them to his neighbors. In such a contingency the physician would be likely to be avoided. Unless he had successfully secreted the name of the pill, the patient or neighbor would go directly to the store with the pill-box, or its number and date, and would buy his medicine at say "list price." The physician gets 10 per cent. below this. The pharmacist or storekeeper gets 15 per cent. below the physician, or 25 per cent. below the consumer. The wholesale druggist or jobber gets 10 per cent. below the pharmacist, or 32.5 per cent. below the consumer, so that if there should be no other discount below this, the manufacturer realizes for his wares 67.5 per cent. of his list prices, or 32.5 per cent. below what the consumer pays; and as the manufacturers' profit should not be less than 15 per cent. upon what he realizes for his supplies, this brings the net cost of his products to him at about 57.4 per cent. of what

the consumer has to pay for them if he pays "list prices." These are all just and fair profits: not at all greater than is right and expedient and necessary to the transaction of a fair and honest business, if such business is to be moderately successful, and pay as many middle men. These middle men are the so-called distributers in the economy of trade, and are considered indispensable between the manufacturers and consumers.

Although there is probably a very large amount of this business done at about these figures, the constantly increasing number of manufacturers and specialties, and the intense competition in trade, all the way along the line from the consumer to the base of supply, introduce a great deal of what is called "under-cutting" prices. The town pharmacist, to attract patronage away from his competing neighbors, will often reduce his profits by offering to retail at prices five, ten, or fifteen per cent. below "list prices," and to attract physicians to his pharmacy may offer to double their ten per cent. profit upon what they want. Such pharmacists are reproached with being "cutters;" and when attempts are made to coerce them back into the ranks, or to boycott them, they take up the defence of advertising themselves as "cutters" to attract buyers at low prices. Then if they sell double the quantity in a given time at half the uncut profits, they are as well off as those who sold half the quantity in the same time at the fair normal profit intended by the manufacturer in his scheme of discounts.

The objects of this recital are to show that there is but little difficulty or obstruction in the relations of this class of physicians to their medical supplies; and that the principal reason of this great success is, that every one along the whole line of trade, from the manufacturer to the physician and patient, makes a fair money profit out of the business; and then to bring into contrast with this condition of things other conditions which coëxist in the common markets for medical supplies.

There is another class of physicians who are independent

of the travelling salesmen and of the advertising pages of their journals, who do more of their own thinking, and who find time not only to study out their cases, but also to give equal attention to the selection and adjustment of their remedies to the individual cases. Through habits of close and well trained observation they acquire ability to know whose testimony to take in aid or correction of their own experience, and ability to know whom to distrust.

With the progress of their art, their therapeutics and materia medica become more simple, yet more vigorously applied. They want few combinations suggested to them, but rather want each individual case to suggest such combinations as may be indicated by symptoms which may vary from hour to hour, or from day to day. By many physicians of this class complex prescriptions and combinations are very infrequently used. If in any case there should be distinct indications for more than one therapeutic effect, the agents required for such effects are used not together, but alternately, thus avoiding the risks of both chemical and physiological incompatibility, and allowing the doses to be varied with the increase or decrease of the separate indications.

In all such practice each agent of the materia medica acquires its maximum importance; and as an indispensable condition to maximum importance it must be of standard quality. The standard of quality for the accepted and established agents of the materia medica is the Pharmacopœia, and this class of physicians rarely go beyond its scope, unless it be upon satisfactory evidence that some new agent may better fulfil their indications than the old ones. And in this connection it may be said that very many of this class are wisely cautious and suspicious of novelties, first because it is impossible to discriminate between those which are of the catchpenny order and those which are not; and secondly, because novelties in their most attractive period have no standard of identity or quality.[1]

[1] A single retrospect will serve to emphasize and justify this caution. Not less than five different substances were sold as Chian turpentine, and some of the strongest cases of the many published cures must have been treated with clumsy imitations.

Now, what are the relations of this class of physicians to their kind of medical supplies?

The physicians and patients who want the highest attainable quality and least complexity in medical supplies, and who apply ordinary common-sense to know when they get them, may not be in largest number, but yet they are sufficiently numerous to create an active, earnest, and large demand, and this by the laws of trade should be met with a plentiful supply; and the demand is thus met, for there is always an abundant supply of excellent medicines in all the mercantile centres of trade. But away from the central markets they are not equally accessible; and in pretty accurate proportion to the distance from the central markets the difficulty of obtaining them is increased. The statement that there is at all times an abundant stock of good medical supplies at a few of the principal commercial centres, and that such become more and more scarce in proportion to the distance from these centres, will hardly be questioned; and if true this indicates very clearly that the difficulty of access to this stock is simply a difficulty of distribution. This is equivalent to saying that the distributers or middle men, namely, the wholesale dealers and jobbers throughout the country, and the brokers and agents who represent them in the few principal commercial centres, do not favor the distribution of this class of supplies. Then comes the question why they do not favor this class of supplies and distribute them as freely as they do other kinds, since, everything else being equal, all dealers, from first to last, will always prefer to deal in good articles, and as a rule have knowledge enough to discriminate between the good and the bad.

The answer to this must be somewhat as follows:

Briefly stated, it is because they are not permitted to make as much money on good as on inferior supplies; and the good are disfavored because they offer a standard for comparison or contrast with the inferior in quality, which tends to throw a distrust upon the latter class that would not be felt in the absence of a standard class.

The merchant, as such, follows his business to make money by it, and the dealers in medicines are no exception to the rule. Medical supplies are to them simply merchandise, and are dealt in very much as railroad supplies, groceries, and dry goods are, and the invariable and inevitable law of trade is to favor the articles upon which most money is to be made. In conformity to this law of trade, if most money could be made off of the best goods, then the best would always lead in all markets, not only at the centres, but also down the whole line of distributers to the consumer. But another general and inevitable law comes into operation just here. Superiority in quality necessarily involves a proportionately higher cost of production. As an illustration, digitalis, throughout its collection, preparation, preservation, and transportation, is an article of merchandise simply, and continues to be so through four or five different merchants, until it reaches the hands of the special and ultimate variety of merchants, the pharmacist and the physician. These latter change the whole character and interest of the commodity. It is no longer simply merchandise in the common acceptation of the word merchandise, but has acquired another kind of value and importance from the fact that the pharmacist and physician are the direct and close representatives of numbers of patients suffering from diseased heart-action curable or controllable by this agent. Now digitalis, which is collected only in the proper season of maturity of the plant, and from second year plants only,—which is dried with proper skill and care, packed and transported so as to avoid damage, internal as well as external, preserved so as best to avoid change, and not held for price until damaged by age,—costs much more all along the whole line of its various markets than the same drug mowed down with less regard to season and age of plant, and pushed through the markets with least possible expense. Yet to the dealers both are simply digitalis the merchandise, to be bought as cheaply and sold as dearly as practicable. Digitalis is rarely used in substance, so somebody along the line of its markets, while it is simply merchandise, and in order to

make money by it, converts it into powder, or into fluid extract or extract. Up to this point there has been a fair, but not entirely trustworthy, chance of discriminating between good digitalis and bad; but here all, or almost all, landmarks of quality and even identity are lost, so that the most expert pharmacist and physician cannot tell whether the preparation is made from good or bad digitalis. If two preparations, one from good and the other from bad digitalis, reach the physician or his patient at the same cost, those who supplied them, all the way along the line of distribution, will have made more money upon the bad than upon the good; and every discrimination of quality being impossible, each dealer will favor that kind upon which he makes most money, and will discourage and disfavor the sales of that upon which he makes least money, in proportion to the smallness of his profits. This, as a general rule of trade, is inevitable, and the rule of itself is not immoral nor bad. In certain directions where the applications of medicines and of food are involved, a distant and not very distinct immorality and injustice are discoverable, but they are commonly too remote to have a strong influence in the intense struggle and competition of trade.

The pecuniary interests of merchandising, although by no means the only important interests recognised, are yet perhaps the safest and the surest upon which to rely for persistent uniform results; and if this be true, the best way to secure superior quality in merchandise is to secure or insure for such a quality superior profits to the dealers. Make it the pecuniary interest, not only of one dealer or manufacturer, but of the whole line of dealers and distributers from producer to consumer, to offer superior quality, and then it will be done, and the stock of good supplies will not lie idle in the few principal markets from difficult accessibility, but will be freely distributed wherever there is a demand for them; and by free distribution and easy access the demand will constantly increase, and the natural tendency will be to keep up the quality for the sake of the profit, and the multiplication of profit by increased demand.

To resume the illustration by a single article of the materia medica: Suppose the skilled collector of digitalis could command twenty cents per pound for his product against ten cents for the common inferior drug: this would support and encourage progress in his superior skill and care. Then suppose the second owner or dealer should buy both kinds at these prices, and in selling to third hands make twenty-five per cent. profit on each: this would be five cents per pound on the good and two and a half cents on the inferior, and he need handle only half as much of the good to make the same amount of money as on the inferior, or in handling the same number of pounds of each would make nearly twice as much money on the good. Then, for the sake of brevity, suppose that two or more middle men or distributers be avoided, and the pharmacist has the choice between digitalis at twenty-five cents and at twelve and a half cents per pound: if he should buy some of each kind, and make powder, fluid extract, and extract separately from both kinds, the one set of preparations would cost him much more than the other, and yet in sensible properties and to all easy tests they would be indistinguishable the one set from the other. The question is thus narrowed down to how to induce the average pharmacist to buy the better quality rather than the inferior. The pharmacist's necessary expenses in proportion to the amount of his business are enormously heavy, far beyond those of any other ordinary business, and he is usually cramped by over-competition and want of capital; still, if he could make the same profit on both he would prefer the better and dearer drug. If in the average pharmacist the mercantile element should predominate over the pharmaceutical, he might use the inferior kind as being "just as good," or he might use both and offer the products of each at corresponding prices, keeping the profits equal. But if it be desirable to secure his strong and active preference for the better quality, so that he shall use that kind only and always, the best single inducement to offer him is better prices, and therefore more profit.

And here the physician is reached in his relations to his

medical supplies. There is no doubt as to where the true interests of his patients lie; and their interests and his are the same. Therefore he may be considered as being virtually the consumer. Now let him inquire of himself how far he keeps the screw of price and cost of his supplies applied to the druggist and the jobber and the pharmacist, and he will then see that at least an important share of the responsibility for inferior medical supplies rests upon him.

He frequently, if not generally, knows what the prices are in first or second hands, from the price-lists published in his journals, or sent to him from their sources, and he generally objects to an advance on these prices that is at all adequate to securing the best quality in his supplies. When the intermediate profits along the line of middle men or distributers are kept out of sight, as they are in the ready-made prescriptions and specialties in general, alluded to in connection with the class of physicians to whom they are addressed, the difficulty about supply and profits is comparatively trifling. Let the class of physicians now under consideration accord or allow to the simple officinals of the materia medica the same scale of profits, namely, first ten per cent., then fifteen per cent. more, and then ten per cent. more, to those who handle these important agents along the line of their supplies, and they will probably soon cease to have much difficulty in obtaining such supplies as they need for their important art. The evils of ignorance and over-competition, and even of mild degrees of fraud, are so general as to seem at present inevitable; and the surest safeguard against their influences upon so important an interest as that of the sick and the suffering would seem to be to make the better way pay better. Physicians themselves are very poorly paid for their art and skill, yet their art and skill to their communities will come to be worth still less than they receive for them, if they gradually more and more lose control of the quality of the supplies which render their knowledge and skill available in the treatment of disease.

DISCUSSION ON SHOT WOUNDS OF THE INTESTINES.

REMARKS INTRODUCTORY TO A DISCUSSION ON SHOT WOUNDS OF THE INTESTINES.

By W. S. Tremaine, M. D., of Erie County.

November 16, 1886.

The general considerations pertaining to gunshot wounds of the abdomen involving the intestines are too well known to warrant any trespass on the valuable time of an audience like this.

The chief thought that occurred in connection with them, from an examination of the surgical literature, or from the personal experience of those who have had opportunities of witnessing many of them, is their marked fatality. The universal opinion is that a perforating gunshot wound of the intestines, permitting extravasation into the peritonæum, is hopelessly fatal. Consequently, until quite recently, the attention of surgeons was chiefly directed in their treatment to some form of euthanasia; and were surgery a non-progressive art,—if its recent magnificent triumphs offered no hope for the future,—this paper might well end here, and the speaker be without excuse to propound certain questions for your consideration. Happily there is hope. Surgery is invading the domain of medicine, and curing with the precision of its modern methods injuries and diseases of the cavities of the body until recently considered inaccessible.

The impunity with which in these latter times the abdominal cavity has been opened, and extensive surgical manipulations carried on therein, gives reasonable ground for hope

that the "do-nothing system" will generally be abandoned, and that laparotomy, where there is reason to suspect that the intestines have been wounded, will become a legitimate and successful surgical procedure.

And this without further preamble opens to our consideration the first question,—

What are the reasons, if any, that lead us to suspect, or believe, that the intestines have been wounded? Or, in other words, does a group of symptoms exist which would lead to an accurate diagnosis of perforation of the intestines by penetrating gunshot wounds of the abdomen?

In seeking for the answer to this question, recourse must be had to the literature of the subject; and of this by far the most comprehensive, at any rate within the knowledge of and accessible to the speaker, is contained in the Surgical History of the War of the Rebellion. In this are tabulated 653 wounds of the intestines, with a mortality of 80.3.

But little information is furnished by examining the details of the reported cases, symptoms not being given as a rule. For instance: Case 208;—private Sterling Sanders, Co. K, 21st Miss., wounded at Antietam, Sept. 17, 1862, by a minie ball "entering the right lumbar region near the crest of the ilium, pierced the small intestine, and made its exit at the umbilicus." The report goes on to say that beef soup, when swallowed, would make its appearance at the wounds almost as soon as swallowed.

Case 211;—private Joseph Irwin, Co. B, 29th Penn., "a wound of the abdomen, with injury of the intestines, was diagnosticated."

These extracts are from two of five cases reported in detail, where it was believed that the small intestines were wounded, and recovery took place.

Case 212;—private James M., Co. F, 14th N. J., age twenty-seven, "received a penetrating wound of the abdomen at Winchester, Sept. 19, 1864. The missile, a conoidal ball, entered at the right side of the epigastrium, at the edge of the ribs, and emerged through the right buttock." No account

of the general symptoms, such as the degree of collapse, pulse, temperature, pain, etc.

Case 215;—private John W., Co. H, 4th Virginia Cavalry, wounded at Warrington Junction, May 2, 1863, "by carbine ball, which entered the left side of the abdomen just above the iliac crest, and passed out the opposite side. He suffered intense pain, which was but slightly relieved by anodynes, and died in great agony on the 5th. At the autopsy it was found that the small intestines had been perforated in two places. Fæcal matter also had been extravasated."

The quotations above given are fair samples of the meagreness of details of symptoms of reported cases in the Medical and Surgical History of the War of the Rebellion. In a very few recorded cases such symptoms as "vomiting, small pulse, extreme restlessness" are given. The lesion of the intestine was either inferred from the direction of the wound, or demonstrated by the autopsy.

Turning to the systematic treatises on the subject, Longmore says (Holmes's System of Surgery),—"A penetrating wound of the abdomen, whether viscera be wounded or not, is usually attended with a great amount of *shock*. Where, in addition to the cavity being opened, viscera are penetrated, and death does not directly ensue from rupture of some of the larger arteries, the shock is not only very severe, but the *collapse attending it is seldom recovered from* up to the time of the fatal termination of the case. This is sometimes the only symptom which will enable the surgeon to diagnose that viscera are perforated. The mind remains clear, but the prostration, oppressive anxiety, and restlessness are intense." Agnew mentions "meteorism and the passage of blood, followed by pain, peritonitis, a quick and feeble pulse, coldness of the surface, a dorsal decubitus, rapidly failing strength, and hiccough." Christopher Heath (Dictionary of Surgery) says,—"The symptoms of injury to the intestine are often indefinite; there is always more or less extravasation into the abdominal cavity, which usually sets up a rapidly fatal peritonitis, accompanied by great pain, tympany, vomiting, hic-

cough, and collapse." Gross the elder says,—"Wounds of the intestines. The two principal signs which must serve to guide us in these uncertain cases are tympanites and a discharge of blood from the anus. A discharge of blood by the anus I regard as a very valuable symptom of the existence of a wound in the bowels." Again: "No useful conclusions can be deduced from the shock and the pain which attend lesions of this character, since both vary greatly in different cases and in different circumstances."

Without multiplying extracts, it is sufficient for the present purpose to say that faint light is thrown upon the subject in most of the standard text-books, and that so far as books go but little positive information can be gained as regards accurate diagnosis of perforations of the intestines.

A somewhat extensive experience of the speaker in wounds of this class, in both military and civil practice, leads to the following conclusions: That the calibre of the ball, the proximity of the weapon, and the position of the wounds of entrance and exit have an important bearing. That as regards general symptoms, the existence of prolonged shock, a lowered temperature, a feeble pulse, great restlessness, marked anxiety of countenance, accompanied by tympanites and great pain, taken in connection with the anatomical location of the wound, afford very strong evidence of a perforating wound of the intestines. That the escape of blood from the anus rarely happens soon after the injury, and is consequently of little value as a diagnostic sign.

Given, a case of penetrating wound of the abdomen by a rifle or pistol bullet of from 32 to 45 calibre, fired at ordinary range, accompanied by the above mentioned general symptoms, the probability in at least nine cases out of ten would be death.

Does the surgical art offer any plan of treatment by which this fearful rate of mortality may be lowered?

In searching amidst the recorded thoughts of master minds in surgery, one finds this question often propounded, and occasionally the answer hinted at with more or less positiveness.

It is a subject for congratulation to us, that the most practical contributions to the answer are largely of American origin. Our own Gross, in 1843, wrote an "Experimental and critical inquiry into the nature and treatment of wounds of the intestines," wherein he makes the following statement: "A man, after having indulged in a hearty repast, receives a penetrating wound in the abdomen from the thrust of the dirk or knife; the bowel is pierced, or it may be nearly divided, and there is a copious discharge of fæcal matter both externally and into the peritonæal cavity, as is evinced in the latter event by the excruciating pain, the gastric oppression, and the collapsed condition of the sufferer. Here the most prompt and decisive measures must be resorted to, or the person will perish from peritonæal inflammation with as much certainty as if his skull had been fractured and a portion of his brain been let out. It will not do for the surgeon to fold his arms and look upon the scene as an idle and disinterested spectator: far otherwise. He has a duty to perform, and that duty consists in dilating the external wound, if it be not already sufficiently large; in hooking up the injured bowel; and in closing the solution of continuity with the requisite number of stitches, at the same time that the effused matter is carefully removed with tepid water and a soft sponge. All wiping must of course be carefully avoided, as this would add much to the risk of peritonitis."

The question was debated by some of the older surgeons, and in 1836 Baudens advocated the enlargement of the wound and the application of the suture, and reports two cases of enterorraphy. Guthrie, after speaking of the frightful mortality, says,—"The do-nothing system is commonly followed by death. A well regulated interference is likely to be more successful."

In the Danish war, Lohmeyer advocated "a search for the opening, to sew up the wounded knuckle, and to return the latter after removing effused fæcal matter." In the Crimean war, similar views were advocated by Legouest. In our own war, 1861–'5, these doctrines were carried into execution by

Doctors Bentley, Judson, Gill, and Kinloch. But in all this the question seems to be restricted to enlarging the *wound;* and in cases where the diagnosis of perforation was not doubtful, the method of making an incision in the linea alba seems not to have been considered.

The propriety of closing by suture a perforation of the intestines is no longer debatable.

The question before *us* is the propriety of incising the abdomen in the middle line,—first, for *diagnosis;* second, to *arrest hæmorrhage;* third, to sew up the *wounds in the intestines*, should any exist; and fourth, to remove *extravasated blood* and *fæcal matter.*

The knowledge gained by laparotomy for other troubles, such as abdominal tumors and the like, undoubtedly gave a great impetus in this direction. Consequently we find a great master in abdominal surgery, the late Dr. J. Marion Sims, uttering, in 1882, the following words: "I have the deepest conviction that there is no more danger of a man's dying of a gunshot or other wound of the peritonæal cavity, properly treated, than there is of a woman's dying of an ovariotomy properly performed. Ovarian tumors were invariably fatal till McDowell demonstrated the manner of cure, which has now reached such perfection that we cure from ninety to ninety-seven per cent. of all cases; and by the application of the same rules that guard us in ovariotomy to the treatment of gunshot wounds penetrating the abdominal cavity, there is every certainty of attaining the same success in these that we now boast of in ovariotomy." ("British Medical Journal," March 4, 1882.)

Let us hope that these bold words may prove, in a measure at least, truly prophetic.

I have stated laparotomy first for purposes of diagnosis. This is perhaps a debatable point, for I take it that no surgeon would now question the propriety of exposing the abdominal cavity and suturing the wounds in the intestines, were such *known positively to exist:* to do so would be to abandon the case to inevitable death. Let us suppose a pene-

trating gunshot wound of the abdomen, where the indications are not clear that the intestines have been perforated,—a point, by the way, almost always more or less in doubt: is it proper to incise in the middle line, and explore? To this I answer, Yes. First, because the intestines may be wounded. Second, in any event, it is nine times out of ten required for the removal of effused blood. We have often in abdominal sections realised the difficulty of arresting hæmorrhage from an exceedingly small vessel or oozing point. We are all familiar with the danger from effused blood allowed to remain in the cavity of the abdomen. Third, the abdominal section adds but little if any danger when done under proper precautions; to which may be added, fourth, the assurance given to the patient that his intestines have not sustained a fatal wound, which cannot but have a marked tonic effect, conducive to recovery.

When the intestines are perforated there can be no longer any doubt as to the propriety of abdominal section, for just as certain as there is perforation there will be fæcal extravasation, and with this extravasation will follow peritonitis and death, provided the patient survive the immediate shock of the injury.

Happily, the question of the advisability of the operation has been set at rest by at least three successful cases in America.

It is doubtful if there is on record any well authenticated case of recovery after a perforated gunshot wound of the small intestines with fæcal extravasation; so no amount of negative evidence can weigh against the positive evidence of these successful cases of laparotomy with enterorraphy for perforating gunshot wounds of the small intestine;—the first case, that of Bull, with seven perforations; the second, that of Hamilton, with eleven wounds; the third, that of Bull, with three perforations.

But little remains for us to consider beyond the "when" and the "how," the *time* when laparotomy should be done, and the *manner* of doing it. I think there can be no question

that the operation, having been determined on, should be done as soon as practicable after the receipt of the injury, for the following reasons: It is believed that the first effect of the injury is to paralyze temporarily the peristaltic action of the bowels, thus for a short time preventing fæcal extravasation: it is obvious that moving the patient will, if it does not overcome this, tend to mechanically displace some of the contents of the intestines. Again, if intra-abdominal hæmorrhage is going on, it will not be likely to stop spontaneously; moving the patient will not, it is certain, conduce to the arrest of hæmorrhage, if it exist; delay increases the chances of peritonitis, thus bringing secondary troubles to add to the primary one, already grave enough.

The disadvantage of delay is well shown in a case reported by Dr. A. V. Park to the Chicago Medical Society, October 5, 1885 (see "Journal American Medical Association," October 31, 1885), where the patient was removed to his home in a farmer's spring wagon, a distance of seven miles, and the next day removed to the hospital. It may be also remarked that in this case section was not made in the median line, but the wound was enlarged. At the autopsy, commencing peritonitis and a quantity of extravasated blood were found: one wound was overlooked.

On the other hand, the advantages of immediate operation at the place where the shooting has occurred, and as soon as possible after the injury, are to a certain extent offset by the fact that the surroundings are liable to be unfavorable to abdominal section, and that the average general practitioner is not sufficiently skilled in surgical manipulations considered necessary to attain success. It has been demonstrated that success in abdominal surgery, other things being equal, increases with favorable surroundings and personal experience in the *technique*. If laparotomy in gunshot wounds is to become an established operation, it can scarcely be expected that an experienced surgeon can always be obtained, or that the appliances and trained assistance so carefully insisted on as essential in other departments of abdominal surgery will always be

immediately available. This difficulty can, of course, be overcome: I would suggest that medical men may train themselves by practice on some of the lower animals. A few experiments will thoroughly convince any one unfamiliar with this work of the necessity for just such training.

Wherever practicable, I believe the dangers of removal will be counterbalanced by placing the patient where the sanitary surroundings are good, and where skilled assistance and necessary appliances can be had. So far, the successful cases have occurred in the hands of men exceptionally well trained for their work,—men of superior surgical skill, and assisted by all the apparatus and advantages of well appointed hospitals. The wounds were inflicted by pistol bullets of medium calibre, viz., 32.

But there is another and graver aspect to the question: the above mentioned cases may be fairly assumed to represent the average cases arising in civil practice; but what of the *battle-field*, where it is obvious that by far the greater number of gunshot wounds occur?

The modern rifle bullet, weighing 500 grains or more, at ordinary range must inflict a much more serious wound than the comparatively small pistol bullet of 22 or 32 calibre. Although the difficulties of immediate laparotomy, under such circumstances, may not in the future prove insurmountable, yet it must be confessed that so far they have not been met. The proceeding, if not positively detrimental amid the smoke, dust, haste, confusion, and pressing demands upon the time of the military surgeon on the actual battle field, will, at any rate, not be found easy of execution. So far as our present experience goes, it would seem the better practice to wait until the wounded one can be carefully removed to a division hospital, in the meantime occluding the external wound or wounds by some convenient form of antiseptic pad. The value and practicability of laparotomy with enterorraphy in military practice can only be satisfactorily determined by experience in future wars. There are many points to be considered that do not greatly concern the civil surgeon.

In regard to the method of operating, the general plan will follow that of ovariotomy, with the same rigid precautions to prevent sepsis. The method of dealing with the wounded intestine occupied the attention of the older surgeons from the plan of the "four masters" who flourished in Paris in the latter part of the thirteenth century, and who used a section of the trachea of an animal. Others used metallic rings, or the ferule plan, as it was called. These were, of course, applied to incised wounds, or where exsection of portions of injured intestines had been made. The suture of Jobert, 1822, Lembert, 1826, Gely, 1827, each has its advocates; but the present accepted one seems to be that of Lembert, or the Czerny-Lembert suture. It may be said of the latter that it is difficult of execution; and as expedition without undue haste is of great importance, that form of suture which is most easily applied, and at the same time is effective in preventing escape of intestinal contents, is best. Experience and experiment have shown that this is the suture of Lembert, the chief point being to bring together the peritonæal coat of the bowel.

It must be remembered that gunshot wounds are *lacerated* and *contused*, and before suture must be converted into *incised* wounds by carefully paring away the contused portions. Where the injury to the bowel is extensive, or several perforations are close together, this is not always practicable without resection of the intestine. In this case certain precautions are necessary: the lumen of the intestine above and below the portion to be removed must be occluded with some form of clamp. Treves and Bishop have devised instruments for this purpose. I have found the ordinary spring clothespin, slightly altered in a few minutes, to answer this purpose. I also suggest, as a precaution against the escape of blood and the contents of the intestines into the peritonæal cavity, that the portion of the intestines to be operated on should be drawn through an opening in a piece of thin India-rubber used by dentists, and known as rubber-dam.

As the bowel derives its blood-supply from the mesentery,

it is important, in order to prevent gangrene, that the mesenteric attachment should be as far as possible preserved. When necessary, a V-shaped portion of the adjacent mesentery can be removed, and this wound closed by the continuous catgut suture. A question may here arise, How much of the intestine can be removed with safety? Baum removed 137 centimetres of the small intestine: the patient recovered from the operation, but six months afterward progressive emaciation resulted in death. This case would seem to indicate that there is a limit to the amount that can be removed without impairing the health.

Sir Spencer Wells suggests that hollow cylinders of cocoa-butter and gelatine be used to afford a support to the intestine and to facilitate the passing of the sutures, when enterorraphy is necessary.

The sutures may be of catgut or fine pure silk, and should be not less than one tenth of an inch apart. I prefer the needle known as Schuetter's, as there is no cutting edge; but ordinary round sewing needles will answer the purpose well. Very small wounds can be closed with the continued suture. All bleeding points must be carefully sought, and ligatured or cauterised. Careful attention must be given to the toilet of the peritonæum. A clean cavity is essential. *After treatment:* Rest, opium, small quantities of peptonised milk.

The following case, occurring under my own care, while not perhaps strictly germane to the subject, is sufficiently so to warrant relation here: John B., aged eighteen, was admitted about ten A. M., Sept. 6, 1885, to the Emergency hospital. At 12:30 A. M. of the same day, or about nine hours prior to admission, he had been stabbed in the abdomen; the wound was three and a half inches in length from the median line towards the right, and three inches below the umbilicus; it penetrated the abdominal cavity, and divided the rectus muscle together with the right deep epigastric artery. He was seen immediately after the injury by a physician, who placed three silver wire sutures through the skin only, and ordered one grain of opium to be given every hour,

which was probably faithfully carried out, as on admission he was markedly under the influence of opium, with contracted pupils, slow sighing respiration, cold surface, pulse 132. One of the stitches had given way; there was a bunch of intestine the size of a man's fist protruding through the wound in the muscular wall of the abdomen and distending the skin. After consultation with my colleagues of the staff of the hospital, I made an incision in the median line, and removed about a pint and a half of clotted blood from the abdominal cavity, which was washed out with warm solution of hydrarg. bichlorid., 1 part to 3,000 of water; the toilet of the peritonæum practised carefully as in ovariotomy, and with antiseptic precautions. As there was no bleeding, the peritonæum was sutured with fine catgut separately, and silver sutures passed through the skin and abdominal muscles, closing the original wound and also the wound of operation. A rubber drainage-tube was left in the dependent angle of the incision, and over all an antiseptic dressing of wood flour prepared with hydrarg. bichlorid. and naphthalin (the usual dressing in use in the hospital), and the patient put to bed. He never rallied. At 5:30 P. M. he asked for a drink; at 10:30 P. M. pulse scarcely perceptible; at 11 P. M. he died.

Before admission to the hospital he had probably taken (at least it was so stated) eight grains of opium. Had he been admitted soon after the injury the result *might* have been different. It is difficult to say whether he died from the wound, or from opium narcosis, or from both combined.

The experiments of Dr. C. T. Parkes, of Chicago, as detailed in his valuable paper read before the American Medical Association at its meeting in Washington, May, 1884, are, in my opinion, of very great value in teaching many points in regard to the technique. I think they should be carefully studied by every practitioner of medicine.

QUESTION I.

WHAT ARE THE DIAGNOSTIC SIGNS OF THE INVOLVEMENT OF THE INTESTINES IN SHOT WOUNDS OF THE ABDOMEN?

Discussed by JOSEPH D. BRYANT, M. D., of New York County.

It is presumed that the expression "diagnostic signs" is intended to be accepted as synonymous with "diagnostic symptoms," and also that diagnostic signs or symptoms are considered to be those signs or symptoms which are characteristic of the abnormal state under consideration. The signs of intestinal involvement will be divided into two classes, viz.,—1. Those referable to the abdomen itself, or the local signs. 2. Those referable to the constitutional effects of the injury, as the constitutional or general signs.

The local signs will be considered first, and will be arranged somewhat in the order in which they will naturally present themselves to the attention of the professional observer.

The wound of the abdominal wall is the leading local sign of primary interest, and the one most eagerly sought for by the medical attendant. The direction of the wound, the character of the discharge from the wound, and emphysema of its borders or of the neighboring connective tissues, are all of great importance in a diagnostic sense. If the course the missile has taken be such that it must have entered the peritonæal cavity, if undeviated, the presumption is strong that the contents of the cavity have been injured. Yet missiles of large size have passed through the peritonæal cavity without being followed by symptoms of intestinal involvement; and post-mortem examination of similar cases has failed even to show any evidence of the existence of an intestinal wound. However, instances like these are more illustrative of a freak of physical force, than of its inconstancy, and are, therefore, more curious than convincing. If blood flow from the

wound of the abdominal wall, and the wound be not in the course of the important blood-vessels of the structure, the hæmorrhage is strongly suggestive of intra-abdominal bleeding, and consequently of visceral involvement. If the bleeding points that are found in the wall of the abdomen do not account for the entire loss of blood, the evidence of intra-abdominal hæmorrhage dependent on intra-abdominal involvement is conclusive. The passage of bloody stools, or bloody urine, at a near period to that of the receipt of the injury, will serve to confirm the belief that may exist of intra-abdominal visceral involvement. The escape of intestinal contents from the abdominal wound is positive proof of involvement of the intestine itself. This evidence is seen, however, very infrequently as an immediate sign, since the extravasated fluids are quite easily retained in the peritonæal cavity, owing to the change of the relations of the wound of the abdominal wall to those of the intestinal wound, caused by the intestinal vermicular motions, the natural movements of the patient, as well as those movements incident to the occurrence of the injury. The ragged borders of the abdominal wall interfere also as a notable obstacle to the escape of these fluids into the external world. Still, if the missile have caused large and gaping wounds of the soft parts, the intestinal contents will escape often at the time of the receipt of the injury, especially if the intestine be plethoric with its characteristic matters, in spite of these circumstances. This sign appears somewhat late in the history of a case, as a rule, and after the formation of inflammatory adhesions that guide the fluids along the adventitious channel formed by them, often from a considerable depth within the abdominal cavity. With this condition of things, the intestinal contents escape readily through the abdominal wound, and alimentary substances may escape even quite as soon as swallowed.

Emphysema. This sign is not associated very frequently with penetrating wounds of the abdomen, but, when present, is almost invariably due to the escape of intestinal gases into the connective tissue situated between the intestine and the

abdominal wall; hence it is associated especially with injuries of those portions of the intestinal tract that are not surrounded entirely by peritonæum. Emphysema may be limited to the immediate neighborhood of the external wound, or become general by spreading gradually from the seat of an intestinal wound into the surrounding connective tissue of the abdominal wall. It may be due also, in part or entirely, to a complicating wound of the pulmonary tissues. Early emphysema of the abdominal wall has been considered by some writers as a certain sign of intestinal perforation, when associated with a suspected penetrating abdominal wound. This statement, while commonly true, must be accepted as yet with a certain degree of caution, since it has happened that a circumscribed subcutaneous emphysema has taken place around non-penetrating stab wounds of the abdominal wall in two distinct cases within the observation of the writer. This emphysema was caused apparently by the suction influence exerted on the external air by the retraction of the divided fibres of the abdominal muscle, its escape being prevented by the valvular arrangement of the structure at the opening through the integument and subcutaneous tissues. Air in the peritonæal cavity may give rise to emphysema if it be forced between the structures bordering upon an abdominal wound into the connective tissues beyond this point. If decomposition occur in the course of a penetrating wound of the abdomen, emphysema of the contiguous connective tissue may ensue, even though the intestines themselves have not been injured. In such a case as this, the emphysema takes place at a later period than in the former case, and is attended by the symptoms peculiar to decomposition, and usually without the acute signs of intestinal penetration. Pain, tenderness, tympanites, bloody stools, and retention of urine are signs of common occurrence with intestinal involvement. The pain is located primarily about the seat of the wound; it is dull or lancinating at first, and is increased by all muscular movements of the patient; later it becomes more intense and of a burning character, accom-

panied by exquisite abdominal tenderness, retraction of the thighs, and obstinate constipation. Not infrequently griping pains are present, attended with frequent desire to stool. Retention of urine, frequent calls to micturition, which may or may not be successful, are of common occurrence in both the early and late history of intestinal involvement.

Tympanites. Tympanites may depend either on gaseous distention of the intestine, or the pressure of intestinal gases in the peritonæal cavity, on extensive emphysema of the abdominal wall, or on a combination of these factors. If tympanites develop soon after pain and tenderness appear, and increase in proportion with them, being at the outset best marked at and around the site of the wound, it is certain to be due chiefly to intestinal distention. If tympanites follow quickly, ante-dating the symptoms of inflammation, or be out of proportion to them, or if much distention of the abdomen, with a drum-like sound, attended by little or limited pain and tenderness, be present, the tympanites depends without doubt on the presence of air in the peritonæal cavity. The substitution of tympanitic resonance for normal hepatic dulness may be considered a strongly diagnostic sign of even a small amount of air in the peritonæal cavity; but it may be caused by the adhesions of the intestine to the anterior abdominal wall in this situation, by a distended colon pressing firmly against the under surface of the liver, and by distention of the colon accompanied by a diminished area of hepatic dulness due to a contracted liver. In the former of the last two conditions, however, the area of hepatic dulness will be increased posteriorly by the pressing upward of the liver, providing the lung of that side be not emphysematous. In the later of these two conditions the posterior area of hepatic dulness will be lessened in proportion to the diminution of the size of the liver. Prof. E. G. Janeway has noted that the transverse colon may pass between the liver and the abdominal wall, causing tympanitic resonance in this situation. This condition has since been observed post-mortem by Dr. H. M. Biggs. If the serous surface of the liver be

adherent to the anterior abdominal wall, hepatic dulness will be present even though air be in the peritonæal cavity. The foregoing marked conditions are so infrequent, however, that tympanitic resonance in the hepatic region, existing in a case of suspected intestinal involvement, may be considered almost pathognomonic of the existence of that condition. Percussion of the abdominal wall may elicit an abnormal line of dulness due to fluids in the peritonæal cavity. This line will be parallel with the long axis of the body, and be influenced by its position. However, the amount of blood or of other fluid necessary to cause this sign must be considerable, especially if the pelvic pouches of the peritonæum have first become filled with it.

Palpation may detect a doughy feeling of the wall of the abdomen, which is imparted to it by the large amount of extravasated blood in the peritonæal cavity.

The constitutional or general symptoms that have a recognised bearing on the diagnosis of intestinal involvement are shock, nausea, vomiting, and hiccough. Shock is the first of the series of constitutional symptoms. It may be mild, or severe, and while its gravity may depend either on the degree or on the idiosyncrasy of the patient, yet severe shock at the outset may be considered as almost diagnostic of a profuse hæmorrhage or an extensive visceral involvement. Intense thirst, constant wakefulness, excessive restlessness, and great anxiety are manifestations of intestinal involvement, all of which are associated more or less intimately with shock, and the first of these with the initial processes of a consequent peritonæal inflammation.

Nausea commonly appears immediately after the intestinal involvement has taken place, vomiting also occurs at intervals, and usually both nausea and vomiting are present subsequently during the entire course of a fatal case. Hiccough usually follows both nausea and vomiting, but is often controlled by the anodyne treatment addressed to the patient. There are many other signs of a primary and secondary character that are to be found in connection with the earlier

or later history of a penetrating abdominal wound complicated with intestinal involvement. They are too well known already to require a recapitulation at this time, and, moreover, they are of a secondary importance, since they are of little practical use for the diagnosis of intestinal involvement when considered independently of the sequelæ that so constantly follow it. It is now to be seen that there are very few positive early indications of intestinal involvement associated with an abdominal penetrating wound. The escape of the intestinal contents from the abdominal wound is a positive one. The presence of extravasated air in the peritonæal cavity, as indicated by modification of the area of hepatic dulness, is a positive sign of the involvement of the intestines or stomach, provided the area of hepatic dulness has not been modified already by abnormalities of position or morbid processes. It should not be forgotten, however, that intestinal involvement may exist without the presence of any, or at least of a sufficient amount of, extravasated intestinal gases in the peritonæal cavity to modify appreciably the area of hepatic dulness.

The escape of blood from the peritonæal cavity through the abdominal wound is positive proof of intra-abdominal involvement, but which of the structures is involved must be largely a matter of speculation. Hæmorrhage from the bowel or from the bladder, other things being equal, should be accepted as conclusive proof of intra-abdominal involvement.

Percussion, as an aid in the diagnosis of ascitic fluid in the abdominal cavity, is of the utmost importance, especially if the line of dulness may be varied by changing the position of the patient. But when this sign is sought for in connection with the diagnosis of extravasated blood in the peritonæal cavity, which blood may be mixed possibly with intestinal matters or urine, its importance as a diagnostic sign is greatly overshadowed by the dangers arising from the dissemination of the irritating agents through the peritonæal cavity. Surely, the surgeon who would change the position

of the patient, and await the slow gravitation of the fluid contents of the peritonæal cavity to its most dependent part that he might define a line of dulness by percussion, will expose the peritonæum to the danger of irreparable injury. This sign can be of but little practical use when properly sought, because when it is found without a change of the patient's position, the loss of blood will have been so great that other signs will have betrayed its occurrence already.

Palpation, when cautiously employed, can develop no facts in connection with extravasation that will possess a decisive influence in determining the question of intestinal involvement in an ordinarily obscure case.

Indeed, in would be far better for patients and for surgery if the diagnostic importance of both percussion and palpation be not recognised at all in these injuries, than that the evidence to be gained by them be incautiously sought for by the surgeon. The severe constitutional symptoms already mentioned can be looked upon with that foreboding which is almost akin to certainty. The minor secondary symptoms also are not to be ignored, but are to be employed as connecting fibres in the diagnostic fabric.

QUESTION II.

WHAT SHOULD BE THE FIRST MEASURES OF TREATMENT IN SHOT WOUNDS OF THE ABDOMEN INVOLVING THE INTESTINES?

By E. M. Moore, Jr., M. D., of Monroe County.

Read by title.

Statistical information of this injury is not of a character to encourage a favorable prognosis. Of 4,463 cases which I have been able to collect, 3,662 died, or 82.7 per cent. If to this should be added the number who died shortly after receiving the injury and before any assistance could be rendered, the percentage of recoveries would undoubtedly be less than 10 per cent. Shot wounds of the intestines are of all degrees of severity, varying from the slightest cut of the intestinal tube, to laceration of several inches or perforation of many portions of the canal. This is or is not attended with hæmorrhage and extravasation of the contents of the intestine into the peritonæal cavity. The extent of bleeding, the amount of extravasation, and the extent of injury are always a matter of conjecture. In most instances the greatest danger of immediate death arises from hæmorrhage.

Those who have had the misfortune to see a case of abdominal hæmorrhage, either following a shot wound or secondary to some operation within the abdominal cavity, will realise how persistent bleeding from even a small vessel becomes in this situation. Prof. Parkes, of Chicago, has justly remarked, in his splendid address upon shot wounds of the abdomen,—"Bleeding only stops when the heart ceases to beat in a faint from excessive loss, or when the amount of blood is so large that by its bulk and weight and distention of the abdominal walls it makes pressure sufficient to occlude the open vessel."

Extravasation from the wounded intestine may take place from a very small opening, cases having been reported where the puncture of the intestine with a hypodermic needle or an aspirator needle was of sufficient size to allow the passage of the intestinal contents into the peritonæal cavity, producing an inflammation resulting in death. How reasonable it is to believe that in shot wounds this will be the rule and not the exception. It is well known that peritonitis from this source is much more rapidly fatal than from any other, patients rarely ever living more than forty-eight hours, and none recovering.

Past practice would condemn the vast majority of these cases to death; for that was the meaning of the expectant plan. So learned a writer as Dr. F. H. Hamilton, in his work on surgery, condemns any interference in these cases, and speaks of the search for wounded intestines, for the purpose of closing the wound or wounds in them, as unsound, excepting only those in which the wounded part protrudes through the abdominal walls, when it were best to suture the intestine and return it to the abdominal cavity.

For further treatment he relied on quiet obtained by opium and abstinence from food,—the expectation being that the serous membrane near the wound in the intestine will, by contact with the peritonæum lining the abdominal parietes, become adherent to it, and so occlude the opening in the tube. This hope has some foundation in the well known rapidity of adhesion between serous surfaces when brought in contact with each other and held there either by the product of inflammation or by suture. An illustration of the strength of this adhesion by suture is given by Dr. Seymour, of Boston, in his report of a case of shot wound of the abdomen involving the colon and small intestine, where resection of the colon and suture of the duodenum were made. The patient died within twenty-four hours, yet the post-mortem revealed the fact that "both the colon and duodenum were perfectly united, as was further shown when the involved parts were subjected to the hydraulic test."

But is it to be hoped that this apposition will occur in any appreciable number of cases when left alone, or, if it does, that adhesion sufficiently complete will take place, preventing extravasation of intestinal matter into the peritonæal cavity? I believe not, and, indeed, it is positively asserted by some writers never to occur. The history of wounds of the abdomen involving the intestines shows that of all recoveries the vast bulk are from wounds to the colon, the "Surgical History of the War" affording but five cases of recovery from wounds of the small intestine.

There are, therefore, two classes of cases to be considered:

1st. Those of the large intestine, involving little or no injury to the peritonæum. The treatment of this class should consist of absolute quiet on the part of the patient, the use of sufficient opium, or morphine hypodermically where opium is not well borne, to control pain and prevent the peristaltic action of the bowels; the keeping open of the external wound; with abstinence from food for several days, and care in the diet for some weeks.

2d. All wounds of the small intestine, such wounds of the large intestine as involve any considerable amount of injury to the peritonæal covering, and all cases of hæmorrhage within the peritonæal cavity.

Within this class will also come wounds of all viscera included in the abdominal cavity, with the possible exception of the liver. With our present knowledge of what the peritonæum will bear in the way of handling where the proper antiseptic measures have been observed; with the almost certainty of death where the patient is left to recover or die, the latter invariably occurring under the plan of expectancy,—there can scarcely be a question as to the first measure of treatment. There is hardly a surgeon of the present day who would hesitate to resort to abdominal section for the purpose of determining the extent of injury, arresting hæmorrhage when it occurs, resecting such portions of the intestines as are badly lacerated, closing wounds by suture where they are at considerable distance from each other,

clearing the peritonæal cavity perfectly, finally closing the abdomen carefully, and applying antiseptic dressing to the surface. The method of procedure in such instances has been placed under other headings, and I will not enter into any detailed account of it.

There is another variety of cases,—those in which there is doubt as to the condition. Such should be properly placed under the second class, and treated in the same manner, as the risk of section of the abdomen is of less moment than the value of absolute knowledge as to the extent of injury. In every case the treatment must depend upon the diagnosis.

Prof. Parkes, of Chicago, has carefully tabulated the following conclusions as the result of his experiments upon this subject, and it is so perfectly stated that it would be a work of supererogation to alter them in any way, except to place the last first. They are:—

1st. Primary abdominal section in the mid-line gives the best command over the damage done, and furnishes the most feasible opening through which proper surgical treatment of such damage can be instituted. Farther, its adoption adds but little, if anything, to the peril of the injury.

2d. Hæmorrhage following shot wounds of the abdomen and the intestines is very often so severe that it cannot be safely controlled without abdominal section, and it is always sufficient in amount to endanger life by secondary septic decomposition, which cannot be avoided in any other way than by the same treatment.

3d. Extravasations of the contents of the bowel after shot injuries thereof are as certain as the existence of the wound.

4th. No reliable inference as to the course of a bullet can be made from the position of the wounds of entrance and exit.

5th. The wounds of entrance and exit of the bullet should not be disturbed in any manner, except to control bleeding, or to remove foreign bodies when present. They need only to be covered by the general antiseptic dressing applied to the abdomen.

6th. Several perforations of the intestines close together require a single resection, including all openings. Wounds destroying the mesenteric surface of the bowel always require resection.

7th. The best means of uniting the wounded intestine after resection is by the use of fine silk thread, after Lembert's method. It must include one third of an inch of bowel tissue, passing through only the peritonæal and muscular coats, and never including the mucous coat. The everted

mucous membrane must be carefully inverted, and needs no other treatment.

8th. Wounds of the stomach, small perforations and abrasions of the intestines, can be safely trusted to the continued catgut suture.

9th. Every bleeding point must be ligated or cauterized, and especial care devoted to securing an absolutely clean cavity.

10th. Is not the moral effect of the assurance to the patient that he will be placed in a condition most likely to lead to his recovery a good substitute for the mental depression accompanying the general and popular conviction that these wounds mean death?

Abdominal surgery in its relation to shot wounds is yet in its infancy, and may be many years in developing to a perfect manhood. Still, the present knowledge of procedure, and the increasing belief in the efficacy of such procedure, sustained by practice and experiment, must and will put enterorrhaphy on the list of recognised surgical operations, and render the convictions of the early surgeons a certainty.

QUESTION III.

UNDER WHAT CIRCUMSTANCES, AND HOW SOON AFTER THE INJURY, SHOULD LAPAROTOMY BE RESORTED TO IN CASES OF SHOT WOUNDS OF THE INTESTINES, AND WHEN IS THE OPERATION CONTRA-INDICATED?

Discussed by

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Theodore R. Varick, M. D., of New Jersey,
Charles B. Nancrede, M. D., of Pennsylvania.

DR. WILLIAM T. BULL.

It is admitted by surgeons generally that shot wounds of the intestines are almost uniformly fatal injuries. Even balls of the smallest calibre used in civil life,[1] a "22" for instance, which have made only one or two wounds of the intestine, have brought about fatal peritonitis; and the instances of recovery have been very exceptional, and at the expense of dangerous peritonitis or the intervention of a fæcal abscess or artificial anus. It has furthermore been demonstrated that operative interference can deal with these injuries successfully. Three recoveries after laparotomy with enterorraphy have been reported, one by Dr. Hamilton ("Medical News," Aug. 22, 1885), and two by myself ("N. Y. Med. Journal," Feb. 14, 1885; "Medical News" and "N. Y. Med. Journal," Nov. 6, 1886); and the unsuccessful operations have revealed the existence of injuries which would certainly have proved

[1] See case of Dr. Phelps, cited by Dennis, Case XV, "Medical News," March 6, 1886, and Case II of this paper.

fatal without surgical assistance. It may be considered settled that laparotomy is the best treatment for shot wounds of the intestines, and that it is generally indicated. In applying this general indication to the individual case, we are beset with difficulties. It is often impossible to ascertain by the usual exploration with probes whether a wound of the parietes be penetrating or not; and even when the intestine has been perforated, positive symptoms of these injuries are often wanting at the outset. Again: If laparotomy be delayed till the symptoms have made the diagnosis sure, it will be undertaken with very much diminished chances of success.

It is not my province to discuss the value of symptoms which indicate wound of the intestine. That has been undertaken by others. In cases which present these symptoms the indication is clear and imperative, and no surgeon should hesitate to give his patient the chance of operation, if the general condition be such as to permit it.

But what I wish to emphasise as bearing on the application of laparotomy is the fact that many cases present few or none of these symptoms; that the sudden onset or the general development of peritonitis is the *first* indication of intestinal wound. And again, that a bullet, which has entered the abdominal cavity in the region occupied by intestine, is much more likely to have injured the gut than to have missed it. Experiment has shown the possibility of avoiding the gut in the cadaver, but clinical evidence is lacking to support it.

If we can be sure that a bullet has entered the peritonæal cavity, we may safely assume that it has injured the intestine or other viscera, and our doubt will be dispelled by the presence of fæces, fæcal-smelling gas, much blood, or serous exudation. There is but one way to ascertain these conditions at the outset, and that is by exploration of the bullet wound. This should be done at the earliest possible moment, when the immediate shock of injury or transportation has subsided, and proper arrangements for operation have been made. I need not dwell long on the necessity of an *early* operation. Delay gives an opportunity for renewed bleeding and fæcal

extravasation, and invites septicæmia from the absorption of peritonæal exudations. If peritonitis be actually developed, with tympanitic intestines, firm adhesions, and purulent foci, the difficulties of operation are almost insuperable, and the chances of success extremely doubtful. This plan of procedure, which I have advocated and already put in practice, will in my opinion prove safer in the aggregate of cases than the policy of waiting for symptoms. Such an exploration, conducted with antiseptic precautions, must be regarded as of trifling risk to the patient. It is not without advantage in a non-penetrating wound. It will enable the surgeon to remove the bullet, and place the wound in the most favorable condition for rapid healing, and reässure the patient.

A penetrating wound enlarged to two or three inches in length will permit the inspection of the viscera in its neighborhood, and the examination of other parts with a sponge or with the finger. For further exploration of the viscera, section in the middle line is necessary. As a general rule, I believe it will be safer in the aggregate of cases to perform laparotomy when the wound is found to be penetrating, even if the cavity be found tolerably clean. But it is worthy of note, that in none of the cases hitherto reported has there been any lack of blood or bloody serum in the cavity. In two instances, when the abdomen was opened only two hours after the injury, there was an abundant exudation of serum containing blood clots.

Let me present in support of this treatment the result in eight cases observed at the Chamber Street hospital since 1877. These are all the cases in which the nature and extent of the wounds have been determined by operation or autopsy, and in which, with but one exception, the intestine alone was involved.[1] The number is small, but the contrast is striking. Five cases of shot wound treated on the expectant plan have

[1] The whole number of wounds in 10 years is 20;—5 were of the parietes only; 7 were of the intestines alone; 1 was of the intestine and bladder; 1 was of the stomach and diaphragm; 1 was of the stomach and liver; 2 were of the liver alone; 3 were not examined after death. These were presumably 1 of the intestines alone; 1 of the intestines and kidney; 1 of the liver and intestines. The 5 wounds of the parietes recovered. All the others died except the two intestinal cases, which were subjected to operation.

all proved fatal. Three cases in which laparotomy was performed after exploration of the bullet wound have yielded two recoveries and one death. The two successful cases have already been reported. The first,[1] Wm. McElroy, was operated on Nov. 2, 1884, seventeen hours after a bullet of 32 calibre had entered the abdomen an inch and a half to the left of, and an equal distance below, the umbilicus. Seven wounds of the intestine were sutured, from one of which the bullet was removed, and the cavity cleared of all clots and bloody serum. The intestines were not adherent, though "coated here and there with clots and flakes of fibrin," so that in order to inspect their surface it was necessary to rub the peritonæum roughly with a sponge. The operation lasted two hours. The wound healed by granulation. I have seen the man within a few weeks, and he remains in good health, working as a truckman. The second case, Daniel Mahoney,[2] aged twenty-five, was operated on Aug. 12, 1886, only two hours after he had been shot with a 32 pistol ball two inches below, and two inches to the left of, the umbilicus. There were no symptoms of shock, and no evidence of internal abdominal injury. The incision into the bullet wound showed that it entered the cavity, and bloody serum escaped freely. Three wounds of the intestine were sutured, and two wounds of the sigmoid meso-colon left gaping, after being dusted with iodoform. From one of these wounds there was free hæmorrhage which was controlled by ligature, and a large blood extravasation in its vicinity made it probable that the bullet was lodged there. It was not interfered with. The bowels moved normally on the fifth day, but complete recovery was delayed till eight weeks, owing to suppuration in the line of abdominal incision, and the protrusion of a knuckle of intestine which was reduced by gradual pressure while the wound cicatrised over it.

The third case, which proved fatal, I will mention more in detail, since it is reported for the first time:

[1] "N. Y. Med. Journal," Feb. 14, 1885.
[2] "Medical News," Nov. 6, 1886.

Case III. On Nov. 6, 1886, a muscular mechanic, of intemperate habits, twenty-four years of age, was shot in the back ten minutes before admission to the hospital. The bullet, of 44 calibre, entered one and a half inches to the right of the spine on a level with the last rib, and could be felt anteriorly beneath the skin, one and a half inches to the right of, and two inches above, the umbilicus. P. 62, R. 22, T. 98°. Severe abdominal pain, surface pale, and extremities cool. An hour later he vomited contents of stomach. Five hours later he was still pale but warm, and had severe pain. P. 92, R. 35, T. 98°. Hepatic dulness diminished, but not absent; abdomen not swollen; tender about the bullet; the left lumbar region resonant; right, dull. The dulness disappears on turning patient to left side (bloody fluid in cavity?). After consultation with Drs. Peters, Weir, and J. B. Hunter, the bullet was removed by a three-inch incision, and the finger passed into the cavity. Considerable bloody serum and gas followed its withdrawal, but no fæces. The gas was thought by some to be of fæcal odor. The abdomen was then opened in the middle line, from three inches below the sternum to two inches above the pubes (eleven inches); one or two pints of bloody serum and clots were sponged out; four perforations, two of the jejunum, two of the transverse colon, were sutured with Lembert's suture; the stomach, liver, and spleen inspected, and the intestines and cavity thoroughly washed out with carbolic acid (1 to 100). In holding the small intestine out of the wound, a vein in the gastro-splenic omentum was torn, but easily secured by ligature. The point of entrance of the bullet was not detected. The tissues of the ascending meso-colon were stained black with extravasated blood. The operation lasted one and three fourths hours. At its close the pulse was 125 (small), R. 42. Reaction was imperfect, and death ensued at the end of eight hours. The autopsy made by the deputy coroner did not disclose the point of entrance into the abdominal cavity. In the retro-peritonæal tissue about the kidney and ascending colon was extensive extravasation of blood; kidney uninjured. About two ounces of bloody serum in the cavity. The wounds were tightly closed, and no others were found.

Comment on these cases is unnecessary. But it is worth noting that none of them presented positive symptoms of injury of the intestine, and that all were submitted to operation on the strength of the preliminary exploration of the bullet wound. The unsuccessful case undoubtedly died from the shock of operation, but the lesion found demonstrated clearly the necessity of interference.

The following are the fatal cases in which no operation was done:

Case IV. An Italian woman, twenty-three years of age, was shot with a "22" pistol, Sept. 25, 1884, the bullet entering the abdominal wall in the

middle line, half way between the umbilicus and pubes. No shock and no abdominal pain. A local peritonitis developed gradually. An abscess burst through the wound, which discharged fæces on the twenty-second day. On the twenty-third day a hæmorrhage of a few ounces from the rectum brought about her death in collapse. The autopsy showed general peritonitis and an abscess encapsulated by adherent intestines, and communicating with the wound. In the wall of this abscess was the epigastric artery (ulcerated), and connected with its cavity two ulcerated openings into the sigmoid flexure—the original bullet wounds. The bullet was embedded in the muscles near the crest of the ilium. There were no other intestinal wounds.

This woman died three weeks before McElroy (the first patient operated upon) was brought to the hospital. I had looked on this case as one likely to recover. The autopsy showed so little damage to the gut that I was led to look carefully into the histories of other cases. The results of this investigation, together with a knowledge of the success obtained in pathological cases, led me to decide to give the next case that presented the chances of operation.

But another later case presents intestinal lesions quite as trifling as the last:

Case V. On Nov. 2, 1886, a French cook, thirty-eight years of age, was brought to the hospital four hours after being shot with a "32" pistol. There was a superficial wound of the chest, and another entering the body in the eleventh intercostal space, three inches to the left of the spine, and passing forwards. Anteriorly the bullet could be felt beneath the skin in the left mammary line close to the cartilages. Abdominal pain; trifling shock; abdomen normal, except for tenderness about bullet; P. 100, R. 36, T. 99⅕°. Two hours later the bullet was removed, and the wound sutured over a rubber drain. Twenty-four hours later there was vomiting, tympanites, and general prostration. In the next forty-eight hours the symptoms were aggravated. At the end of the third day the wound was enlarged so as to admit the finger, on withdrawing which fluid fæces escaped. The general condition did not admit of further interference than free incision of the parietes in the track of the wound; but this was sufficient to let out a quantity of fæcal matter, and to reveal an opening in the posterior wall of the descending colon. Death ensued on the fourth day. The autopsy disclosed a general purulent peritonitis, fæces being found in the exudation, and the intestines matted together. The omentum was firmly adherent to the transverse and descending colon. The bullet had passed through the wall of the descending colon, both posteriorly where it is uncovered by peritonæum, and again anteriorly close to the point of reflexion

of the peritonæum to the lateral abdominal wall. The wounds were about one inch apart. There were no other intestinal wounds, and the other organs were healthy.

In this instance the mere enlargement of the wound from which the bullet was extracted would have been sufficient to examine the colon, and to detect and suture the wounds.

The following cases I cannot present with as full details as are desirable; but they will serve to strengthen your convictions, as they gave rise to mine, of the necessity for operation:

Case VI. A machinist, forty-nine years of age, shot himself accidentally, June 24, 1878. On admission to the hospital a few minutes later he was in a state of profound shock. The wound was situated two inches to the left of, and one inch below, the umbilicus. Reaction was slow and imperfect. Two hours later he vomited copiously (contents of stomach and bile). The vomiting was repeated, collapse occurred, and he died at the end of twenty-four hours. The autopsy revealed several ounces of "coffee colored" fluid in the peritonæal cavity. [Fæces not referred to.] The bullet had passed through the small intestine and psoas muscle, and lodged in the abdominal wall near the crest of the ilium.

Case VII. Sept. 24, 1881, a laborer, aged twenty-five, was shot in the abdomen, two and a half inches above, and two inches to the right of, the umbilicus. On reaching the hospital he was intoxicated and in good condition, but bloody urine was drawn. Within twelve hours vomiting occurred, peritonitis developed, and he died in three days. The autopsy showed "several perforations" of the small intestine, and the bullet lodged in the ascending colon.

Case VIII. May 4, 1879, a mechanic, thirty-seven years old, shot himself with a pistol. The bullet entered two inches to the right of, and one and three fourths inches below, the umbilicus, and was felt under the skin on the inner side of the left thigh, and removed. P. 108, R. 25, T. 99¼°; bloody urine; moderate abdominal pain; in a few hours vomiting and collapse. Retention of urine persisted. It was found on autopsy that the ball had made six wounds of the small intestine, and passed through the bladder to the thigh.

In the light of our present knowledge, the record of these cases is a melancholy one. None of them, with possibly the exception of the last, presented lesions so serious as those of the cases which have been operated on. All of the patients were victims to that policy of non-interference which was born of the dread of wounds of the peritonæum. The achiev-

ments of antiseptic surgery have dispelled that fear,—and we are in duty bound to give to abdominal injuries the chances offered by an early and thorough exploration; and as our experience extends, there is every reason to believe that our successes will multiply. In considering the contra-indications to laparotomy, we must remember that many wounds involve the solid viscera as well as the intestines. This is especially true of those which enter the abdomen in the epigastric or either hypochondriac region, and pass through the stomach, spleen, or liver, or, entering from behind, wound the kidney. These are very complicated injuries, and, in the case of liver or spleen, and kidney to a less degree, are accompanied generally by profuse hæmorrhage, and consequently profound shock and depression.

I am doubtful of our ability to cope with such serious lesions in addition to those of the intestine. Dennis has reported one case of a bullet entering the epigastrium and passing through the liver, in which laparotomy was of no avail; and two similar cases in my service have been subjected to operation by Dr. Chas. H. Wilkin and myself. One patient died during the operation (reported in the "Med. News," Nov. 6, 1886). The other survived it but an hour. The stomach might offer insuperable difficulties if the posterior wall were perforated; but the spleen and kidney could be dealt with more satisfactorily by extirpation. But these manipulations, added to intestinal suture and the toilette of the cavity, would make such prolonged operations that success would be extremely doubtful, and they would certainly not be justifiable in a patient suffering from a serious degree of shock. Uncomplicated intestinal wounds are not attended with profound shock, and the depression following their infliction is apt to be followed by reaction. When the solid viscera are involved, the shock will be profound, its phenomena prolonged, and reaction incomplete. Hence I regard a profound degree of shock as a decided contra-indication to laparotomy. The phenomena of this condition must be interpreted by the individual surgeon according to his own ex-

perience and judgment. A partial or complete reaction may change his view as to the gravity of the case, and justify a disregard of this contra-indication. But it must be remembered that the exposure and handling of the viscera are of themselves an operation compromising to the life of the patient, and one which should not be undertaken unless there is reasonable chance of success.

A well developed peritonitis might be regarded as a contra-indication, in view of the diminished chance of successful operation. For the reasons mentioned at the beginning of this paper I do not think that we are in a position to decide this yet. But in view of the fact that it is no longer considered an obstacle to operations for the removal of tumors or for intestinal obstruction, and that independently of wounds this condition has itself been cured by laparotomy with irrigation and drainage, we are justified in disregarding it, unless the patient be too much depressed to warrant any operation.

In conclusion, let me make one exception to the rule of treatment I have advocated, to explore the bullet wound first. It is in cases where the wound is situated in the posterior wall of the abdomen, or in the lateral wall covered by the lower ribs, and there is no evidence of any wound anteriorly. Here enlargement of the wound would not permit a satisfactory inspection of the cavity, and there are many chances of the missile's being lodged in the thick layer of muscles, or deflected by the ribs; and I believe it would be manifestly proper to wait for symptoms before resorting to laparotomy. But with this exception, and with the contra-indications I have mentioned, I am convinced that the surest and safest and quickest way of dealing with shot wounds of the intestine is first to assure one's self by exploration of the wound of entrance that the cavity has been entered or the gut injured, and then to repair that injury through laparotomy.

DR. THEODORE R. VARICK.

Assuming that a diagnosis has been made that perforation of the intestines has occurred, we are brought face to face with one of the most formidable conditions a surgeon is called upon to treat.

As an evidence of the fearful mortality attending injuries of the kind, I need but to refer you to the Medical and Surgical History of the late war in this country; to Alcock's reports of cases occurring during the Prussian war of 1836-'7; to Mathews's Records of the British Army in the Crimea; and that of M. Chenu in the French army in the same war.

The indications of treatment are based upon the recognition of the various factors leading to death, which are primarily shock and hæmorrhage, and secondarily peritonitis, resulting from the wounds and the extravasation of intestinal contents into the peritonæal cavity, which, if life be sufficiently prolonged, terminates in sepsis.

The gravity of wounds of the kind is modified by location and size, as to whether affecting the large or small intestine, or inflicted from behind, opening the gut where it is uncovered by peritonæum, and whether it is a simple perforation, multiple, or complicated by the opening of an artery or vein.

The symptoms indicating the predominance of either one of the factors alluded to might be construed as a guide as to the immediate or later resort to operative procedure.

In some instances, the eversion of the mucous membrane, it is alleged, in cases of small wounds, may possibly for a time prevent extravasation, but later on the occurrence of sloughing at the periphery of the wound allows extravasation to occur and peritonitis to ensue.

Sloughing may occur at an early period, as in a fatal case reported by Dr. Chas. A. Jersey, in which death took place on the fourth day. The autopsy showed that "the edges of the two perforating wounds in the mesentery had separated, and their surfaces were covered by a blackened, softened slough, discharging pus into the peritonæal cavity."

This eversion of the mucous membrane observed in wounds of the intestines, acting as a temporary barrier, seems to me to exist more in theory than clinical observation would warrant, and should be discarded altogether from the question of treatment, especially when we consider the difference between a clean cut or punctured wound made with a sharp instrument, and one inflicted by a bullet.

In the one there is no loss of substance, but a simple solution of continuity; in the other there is not only a solution of continuity, a frequent actual loss of substance, but the tissues are torn, frayed out, and the vitality of the surrounding tissue destroyed, the part seemingly punched out; while the contraction of the muscular fibres tends more and more to keep open and enlarge the wound, offering increasing facilities for the extravasation of the intestinal contents. No matter how small the perforation may be, there is almost always a corresponding amount of extravasation.

It is barely possible that peritonitis, provided the opening be small and the extravasation limited and gradual, may, as in non-traumatic cases, cause a sufficient amount of adhesions to circumscribe the effused matter and terminate in abscess. This is so very improbable as to merit little consideration.

The exceedingly small percentage of recoveries after gunshot wounds of the intestines raises the question, not so much as to the necessity of an operation, as it does the time when laparotomy should be performed.

The contra-indications are only such as would foreshadow the rapid approach of dissolution, when the operation would be absolutely useless.

Shock, to a greater or less extent, always accompanies shot wounds of the intestines, and is a factor which is often a source of embarrassment, governed oftentimes as much by the nervous susceptibility of the patient as it is by the gravity of the wound. Viewed in the abstract, it is exceedingly fallacious; but taken in connection with gradually increasing evidence of exhaustion, such as greater rapidity and feebleness of the pulse, jactitation, sighing-respiration, and sinking

of the temperature, indicating intra-abdominal hæmorrhage, and in cases in which in addition is found dulness at the more depending portions of the abdomen, with tympanitic distention of the anterior portion, immediate laparatomy is clearly indicated, that the bleeding vessels may be tied and the extravasations removed.

In this connection I desire to call attention to the significance of tympanitic resonance over the liver, and also to the persistence of hepatic dulness,—first brought to the notice of the profession by one whose memory is dear to every one of us, the lamented and illustrious Flint,—as follows: "Tympanitic resonance over the liver, however, cannot be considered a proof of the presence of gas in the peritonæal cavity, inasmuch as the resonance is found not infrequently when the transverse colon is much distended with gas, or when this portion of the intestine is pushed upward above the lower margin of the liver; but persistent hepatic flatness is proof almost absolute against perforation." The first condition, taken in connection with other corroborative symptoms, would, as before remarked, call for prompt action, while the latter, although not an absolutely certain contra-indication, might justify delay. It should be borne in mind that the conditions of fulness or emptiness of the stomach and bowels, or, in other words, *whether the injury is received shortly after a meal or fasting*, are important factors governing the amount of extravasation from the wound.

The character of the vulnerating body enters into the estimation of the gravity of the wound;—thus, a charge of shot produces a more ragged and extensive injury than one inflicted by a single bullet; and the frequent lodgment of pieces of clothing and other foreign substances within the abdomen adds to dangers of irritation and sepsis, and demands immediate removal; the longer these substances are allowed to remain, the less chance there is of ultimate recovery.

To the genius of Ephraim McDowell are we indebted for the demonstration of the practicability of intra-abdominal operations, and this demonstration has given rise to the brill-

iant results obtained by a host of surgeons eminent in the domain of gynæcology, until laparotomy has become firmly established as a justifiable, and in many instances an imperative, operation in surgery. If it is demanded in the various phases of ovarian and uterine disease in which a fatal result may seem far distant in the future, how much more is it demanded in cases which, if active measures are not at once resorted to, lead to a fatal result, not in days or weeks, but in hours, or perchance in minutes. If the operation is considered a desperate one, we should bear in mind that we have a desperate case to treat. The day of expectancy is past, and the time for bold and decisive action has arrived.

Would not a surgeon be worse than criminal to abandon a patient whose life-blood is oozing away, whose peritonæal cavity is subjected to the contact of fæculent matter, or perchance foreign substances from without, lighting up peritonitis and sepsis, leading to inevitable death, when in the light of surgical science of the present day means are offered to stem the outflow of life, to remove by thorough cleansing of the peritonæal cavity all foreign substances, and by the various methods of continuous suture to close the door to farther extravasation, and allow a conservative plastic exudation to complete what art commenced? Who would not at once remove a foreign body from an extremity, the effect of which would be simply the production of a limited amount of inflammation and suppuration? And how much more is it the duty of the surgeon to remove more deadly material from the abdominal cavity, whose presence moment by moment tends more and more to shorten life?

If time enough has already elapsed to note a gradual descent of temperature, it indicates a continuous hæmorrhage. Operate at once, and arrest the hæmorrhage. If the temperature has ceased to fall, and has begun to rise above the normal, inflammatory consequences are already initiated, but possibly it may not yet be too late to operate. At all events, give your patient the benefit of a chance, no matter how small, as against an almost absolute certainty of death.

DR. CHAS. B. NANCREDE.

As much of what I had proposed saying has been far better expressed by the gentlemen who have immediately preceded me, I feel somewhat at a loss how to continue this discussion.

I must entreat your indulgence while I pursue certain lines of thought which are necessary, although somewhat tedious, preliminaries to the few and brief practical conclusions at which I have arrived. In the discussion of such a new operative procedure, where the actual experience is restricted to less than a dozen operators, my mere reiteration of the views already enunciated will go far towards demonstrating their correctness, since almost identical conclusions independently arrived at by different operators amount very nearly to proof. Still it should be distinctly understood that whatever I advance is merely provisional, until the evidence of extended experience either confirms or modifies our present views. Who would be inclined to accept as the canons governing modern ovariotomy the rules in vogue twenty years ago? Recall how fundamentally accumulated experience has changed them. If this be true of an operation which was even then no new thing, had been performed hundreds of times and by many operators, it is still more likely to prove true concerning the procedure now under consideration. Nothing more than certain general physiological, pathological, and therapeutical facts, reënforced by analogical reasoning from the experience of abdominal surgery, guided the first operators. So far, experience seems to have confirmed the theoretical deductions which induced these truly scientific surgeons to boldly attempt to rescue those who too commonly had been condemned to almost certain death by the "let alone" plan of treatment. The truth of this latter statement is manifest when we reflect that only about eight persons out of each hundred so injured recover, and that probably even this low estimate is too high.

The escape from death of these few cases does not make against operating, since they are too exceptional to establish

any general principles; nay, more, they teach, when properly interpreted, the necessity of laparotomy.

When deciding upon the merits of any new operation, it is of prime importance to carefully consider the following questions: What are the tendencies of the injury or disease?—are they toward recovery, or death? When death takes place, what is its cause? When recovery ensues, what conservative processes occur? How likely are these conservative processes to take place? What favors or prevents them? How reliable are unaided natural methods compared with those which art affords?—and should they be imitated by the surgeon, or avoided? Finally, what are the dangers inherent to the operation of laparotomy, and what advantages does it offer?

First. The first question can be briefly answered. The tendencies of the injury are toward death, for, despite all nature's efforts, but eight per cent. of recoveries ensue; and from this eight per cent. an unknown, but probably considerable, quantity must be subtracted for incorrect diagnosis. Thus, one surgeon reports that he has met with four cases in his own practice where the abdominal cavity has been traversed by a ball, with the post mortem evidence that the gut was unwounded.[1] Again, only one wall of the intestine may be wounded by a ball which is moving at a comparatively high rate of speed, and has not been deflected so as to travel sideways, as so many small conical balls do. If, in addition to this, the ball pass obliquely through the intestinal wall, we have an important practical explanation of some of those exceptions to the rule of death. In a case in which I sutured two ball wounds of the stomach and two of the duodenum, the wound of entrance into the stomach was so cleanly cut, so oblique, and so air tight, that no handling of the distended organ caused any escape of flatus, and it was only after considerable manipulation with a director that I could convince myself that there was anything but a superficial wound of the viscus. Now, all that was necessary here was a circumscribed

[1] McGuire, "Trans. Am. Med. Association," vol. xxxii, pp. 399, 400.

peritonitis to glue the injured organ to the abdominal wall, and recovery would have ensued. The wound of exit, however, was much larger, and ragged, and did permit fluids to escape. Still farther, the wound of entrance into the duodenum was, contrary to expectation, larger and more ragged than that of exit from the stomach, while the posterior wall of the duodenum had such a ragged opening in it that I thought for a time a partial excision would be necessary. Does not this actual observation teach us that while a single wound may not admit of primary, or even under favorable circumstances of secondary, fæcal extravasation, yet multiple ball wounds must of necessity always admit of both?

Second. What is the cause of death? In nearly every case septic peritonitis, caused by extravasated flatus and fæces, possibly also by fragments of clothing, as in a case I mention later. Of the cases of peritonitis due to fæcal extravasation, over ninety per cent. die within forty-eight hours. In exceptional cases, where the ball has produced a large abdominal wound, such free drainage for the effused fæces has been afforded that they have not become diffused throughout the abdominal cavity, and in like manner the free drainage of all inflammatory products has resulted in a recovery. Hæmorrhage in itself is rarely a cause of death in cases where an operation could be contemplated, but it may occur to a dangerous extent in the young or aged, and that, too, from vessels of a size to be rightly considered insignificant were they not situated in a closed cavity. Sapræmia, *i. e.*, septic intoxication, is also a cause of death, and it is a question for future investigators to decide whether this is not of more common occurrence than is usually supposed.

When recovery ensues, what conservative processes occur? A limited adhesive inflammation, which glues the injured bowel to the abdominal wall or a neighboring viscus. How likely are these conservative processes to take place? Roughly speaking, in eight per cent. of the cases;—but this is not at all exact, for probably adhesions do form far oftener, but, the inflammation being of a septic character, no reliable, permanent

union occurs, but the adhesions give way, allowing a secondary fæcal extravasation to take place. Again: A small primary fæcal extravasation may become limited by healthy adhesive inflammation, or a secondary one may take place among adhesions, in both cases to give rise to an abscess which, if it evacuates through the abdominal wall, may result in recovery; but if it bursts internally, death must follow. The former result is one of the greatest of rarities.

What favors or prevents these conservative processes? The absence, or slight extent, of fæcal or gaseous extravasation; a favorable relation of the wounds with reference to each other, the neighboring viscera, and the abdominal wound, and, above all, an aseptic condition of the wounds; for without this no reliable, limited, adhesive inflammation can occur; and partial or complete arrest of intestinal peristalsis, *i. e.*, rest, all favor, while the reverse prevents, the conservative processes.

How reliable are unaided natural methods compared with those art affords, and should they be imitated by the surgeon, or avoided? What I have already said answers this question in the negative. Finally, what are the dangers inherent to the operation, and what advantages does it offer? Shock, due in such cases to prolonged irritation of the abdominal sympathetic, and the risk of rendering a peritonitis septic and diffused when it might have remained local and simple, are the dangers inherent to the operation. Since, however, we have it in our power to prevent this peritonitis from being originated by our manipulations, and to render what must necessarily follow the operation comparatively innocuous, shock is all we need dread. On the side of interference, as has just been said, we can almost certainly prevent septic peritonitis, or reduce its dangers to a minimum. We can prevent sapræmia, a common cause of death, due to the absorption of ptomaines, or perhaps blood ferment. Should peritonitis have set in, we can afford efficient drainage for the poisonous effusions; we substitute for adhesions of doubtful permanancy certain methods, which secure the escape of the injured portion of gut into the lumen of the bowel; we restore the con-

tinuity of the gut if it be nearly or completely severed, as not uncommonly occurs; we avoid the risk of fæcal fistula, which, had it occurred in my patient, would have soon destroyed life by inanition; we secure the arrest of hæmorrhage, which even though small in amount, by the absorption of blood ferment or ptomaines resulting from decomposition, may prove fatal. In fine, we do all or even more than were we to operate for a ruptured, suppurating ovarian cyst, with perhaps severe hæmorrhage combined. Supposing, for purposes of illustration, such conditions to coëxist, who would question the absolute indications for operating? If then my facts, and deductions from them, be true, any ball wound of the intestines should be treated by suture, so that I trust you will grant that these preliminary remarks have been in reality only an extended theoretical answer to the all-important query, "Under what circumstances should laparotomy be resorted to in cases of shot wound of the intestines?"

The results of putting this theory into practice, as you have already heard, have answered the question in the same way, so that both upon theoretical and practical grounds I maintain the thesis, "Always operate in shot wounds of the small intestines, except when certain contra-indications, presently to be mentioned, exist."

But it will be urged that notwithstanding the clear manner in which the methods of diagnosis have been set forth by Drs. Tremaine and Bryant, there must always be room for mistakes, and no wound of the bowel may exist. Thus, a round ball, after travelling beneath the skin for some distance, penetrated the abdomen at the linea alba, passed downward, backward, and to the left, lodging near the left iliac bone. No wound or contusion of the bowel could be detected after death on the third day, but a piece of cloth, lymph, and three pints of reddish serum were found in the abdominal cavity. A conoidal pistol ball entered obliquely to the right of the umbilicus, tore the parietal peritonæum, and emerged five inches below and to the left of the umbilicus. After death on the third day, no visceral injury was found, but lymph and a

large quantity of bloody serum. I could readily quote many other cases; but I merely ask the question, Could these cases have done worse than die?—and would not they both have had a fair chance of recovery had the ball, effused blood, cloth, etc., been removed, a careful toilette of the peritonæum performed, and effectual drainage provided for, had it been deemed necessary? It thence follows that a penetrating gunshot wound of the abdomen, with only a *probable* wound of the intestine, also demands an exploratory operation at least, and suture of the wounds of the gut if such exist.

For those who desire categorically the indications for operating, and who decline to accept my last proposition, I shall rehearse the following: Vomiting of considerable quantities of blood, or the passage of the same per anum; the rapid accumulation of fluids in sufficient amount to be detected by physical exploration, which fluids must consist chiefly of blood,—demand at least an exploratory operation; the rapid supervention of general peritonæal tympany, indicating, as it does, certain and extensive perforation of the gut, calls for operation. It is hardly necessary to mention that the escape of fæces, flatus, or such amounts of blood as cannot be accounted for by the parietal wound, and which cannot be arrested after a careful search of the point of entrance or exit of the ball, demands active interference.

How soon should the operation be done? As soon as the condition of the patient warrants a prolonged operation, likely to involve much shock,[1] and proper assistance, instruments, etc., can be obtained. When much suspected or undoubted hæmorrhage is taking place, we should, as after other injuries, disregard to a certain extent the unfavorable condition for operation, knowing that the shock is probably largely due to the effusion of blood, which must be checked at all hazards if life is to be saved.

When is the operation contra-indicated? Profound shock, provided it be not mainly due to hæmorrhage, which can

[1] I have seen irritation of the solar plexus cause temporary cessation of the pulse at the wrist

probably be rapidly arrested, is an undoubted contra-indication. If the greater part of the shock be not due to bleeding, especially in the young or old, the prolonged handling of the bowels is apt, through the abdominal sympathetic, to produce a dangerous condition of prostration in those whose vital powers are already depressed by the injury. Another contra-indication is such an effusion of blood, escaping externally, internally, or combined, as would render it probable that the added shock of the operation would terminate life, even though the bleeding be checked. As I can hardly conceive of any circumstances where at least a perfectly clean abdominal wall, hands, and instruments cannot be secured, with some germicide, such as mercuric bichloride, iodoform, iodine, or carbolic acid, with at least one tolerably competent assistant, the surroundings of a patient should never contra-indicate operation in an otherwise favorable case; but I cannot think that every physician should attempt a laparotomy for gunshot wound. An operation demanding so much care, experience, and attention to details can rarely be performed by a tyro without undue loss of time and added handling of the bowels. If possible, only one pair of hands should be introduced into the abdominal cavity, and those the surgeon's; so that I cannot but look upon inexperience as approaching a positive contra-indication.

When skilled assistance cannot be obtained in an otherwise favorable case, the attempt may perhaps be made, but most cases will do better if left to nature than operated on by a bungling surgeon, who from nervousness or inexperience will overlook some of the essential details of aseptic abdominal surgery. If, from the patient having been seen too late, a generalised well advanced peritonitis exist, laparotomy is strongly contra-indicated; for, since the one aim of the operation is to *prevent* diffused, unhealthy peritonitis, no indication for its performance any longer exists. It is true that abdominal section has been advocated and successfully performed for acute peritonitis, but I do not think it will avail for cases following gunshot wounds of the intestine. Wounds

of other organs than the intestines or stomach will, according to their ascertained or probable severity, serve as contra-indications, or the reverse.

If I may be permitted to say one word that is a little outside of my province, I would like to call attention to the fact that a wound of the posterior wall of the stomach was sutured without difficulty in my own experience. An ordinary cambric sewing needle was used, and it acted admirably. In support of my apparently arrogant statement that experience is requisite for this operation, the gentlemen must remember that opening an abdominal wall, tense and rigid, and manipulating and taking out, as I did, twenty feet of intestine and replacing it, is very different from doing the same thing in an abdominal cavity after taking out a forty or fifty or ninety pound abdominal tumor. It is exceedingly difficult to get the intestines back.

QUESTION IV.

WHAT ARE THE ESSENTIAL FEATURES OF THE TECHNIQUE OF LAPAROTOMY, INCLUDING THE MANAGEMENT OF THE WOUNDED INTESTINE?

Discussed by

FREDERIC S. DENNIS, M. D., of New York County.
JOHN B. HAMILTON, M. D., of Washington, D. C.

DR. FREDERIC S. DENNIS.

No operation in all surgery demands more careful attention on the part of the surgeon. He must leave nothing undone if he expects success. Every trivial detail must command his thought. The success of laparotomy depends upon carrying out the great principles of antiseptic surgery in its minutest details. While no unnecessary time must be lost, undue haste must be guarded against lest this formidable operation be undertaken without abundant provision to meet its many exigencies.

In any case of penetrating wound of the abdomen where an operation has been decided upon, the preparation should be made at once, and should embrace everything which has reference to the operation. If in private practice, the room should be first selected where the laparotomy is to be performed. Instructions should at once be given to make the necessary changes. The room should be abundantly lighted, and should have a sun exposure. The room should be as free from furniture as possible, the floors scrubbed, and a kitchen table with a stand are the only necessary articles of furniture. All else only contributes to danger. As some two

hours are requisite for preparation of the patient, instruments, dressings, solutions, etc., this time can be well employed in an attempt to disinfect the room. A few lumps of sulphur can be placed in an iron pot, and this vessel upon a high step-ladder as near the ceiling as practicable, and the sulphur ignited. As the fumes of the sulphur descend, they will fill the room. In half an hour open the window, allow the gas which has descended from the ceiling throughout the room to pass out the windows, and raise the temperature by a fire to above eighty degrees Fahrenheit. While this is not a thorough disinfection, it provides against many dangers, and is the best that can be done in haste. The solutions for continuous irrigation should be prepared of different strengths. One of (1 : 1000) bichloride of mercury for external irrigation; another of (1 : 10000) bichloride for peritonæal irrigation; one of (1 : 20) carbolic acid for purification of instruments, ligatures, sutures, needles, and sponges.

While these preparations are going on, in order to lose no time, the attention should be directed to the patient. The abdomen, perinæum, thighs, and chest should be washed with warm water and soap, and scrubbed well with a brush, except over the track of the wound, and only gentle manipulation should be employed in the vicinity of the wound. The umbilicus should be cleaned, as this has been a source of infection in cases of abdominal section. The front of the abdomen should be shaven, and then irrigated with a (1 : 1000) bichloride solution. Over the abdomen pour now a saturated solution of iodoform and ether, or naphthalin and ether, and wrap the parts immediately in new, clean towels, wrung out in a warm solution of bichloride of mercury. The person who is to administer the ether should lose no time in preparing everything to meet every possible emergency. All known stimulants should be in readiness for immediate use, including a transfusion apparatus, which can be made extemporaneously from a Davidson's syringe. Mikulicz's solution, consisting of one litre of warm distilled water, in which is dissolved six grammes of chloride of sodium

and one gramme of carbonate of sodium, makes the best transfusion fluid. The tongue forceps and the battery should not be forgotten. The antiseptic dressings should be especially prepared for the patient. The bed-clothing to be used on the table should be disinfected at the same time that the room is purified. In making the antiseptic solution, distilled water should always be employed; and when it is impossible to procure it in sufficient quantity upon so short notice, the surgeon should avail himself of the water which has been taken directly from the kettle. Next to pure distilled water, the boiled water from the kettle or the boiler is the safest water upon which to rely for irrigation.

Every person beyond the two assistants and the physician who is to administer the anæsthetic may be looked upon as an additional source of danger to the patient. I cannot impress too strongly the necessity of having only a few present at such a critical operation, and not only a few, but a selected few, because it is highly important that among the few present there should be no one in the room who has recently been present at an autopsy or in a dissecting-room.

Everything now being ready, a tablespoonful of brandy should be given, and then the anæsthetic. The surgeon and his assistants should thoroughly wash and scrub and disinfect their hands. The surgeon should now place upon the umbilicus, and over the symphysis pubis, and upon each side of the patient, clean towels wrung out in a warm solution of bichloride of mercury. These towels may be fastened to each other by safety-pins, and there should be under the patient rubber-cloth with two sand-bags under it, so as to form a trough to provide for free drainage of the irrigating solution into some receptacle at the foot of the table. Before beginning the incision, pass a catheter into the bladder, not only because it affords the surgeon more room in the pelvis, but to prevent this organ from being cut into as it has been in laparotomy.

The incision in abdominal section should be in the median line. This incision applies to every abdominal operation irrespective of the cause. This is a rule for universal appli-

cation, and exposes the patient to less risks than an incision in any other part of the abdominal parietes. I have regretted the violation of this rule in two laparotomies for stab wound, where I made the incision beginning with the wound, which in neither case was in the median line. I experienced great difficulty in exploring the cavity and in arresting hæmorrhage, and also greater difficulty in closing the wound in the muscular tissues, and still greater trouble in securing healing by primary intention in the muscular parietes.

The central incision divides no large vessels, and passes through the linea alba, which can be securely sutured after the operation; and this incision permits the surgeon to explore with the least difficulty the peritonæal cavity, and is also less likely to be the seat of a future ventral hernia. Where the case is a suitable one for a high incision, the coil of small intestine is less likely to protrude if the central incision is above the umbilicus rather than below, and the contents of the peritonæal cavity can be returned with greater freedom and safety. In exploratory laparotomy this is the better plan. The great difficulty of establishing a correct diagnosis as to the exact seat of trouble makes it all the more important to employ the median incision, which renders the exploration of the entire cavity comparatively easy and thorough in every respect. The median incision should never be extended laterally to the loin to join a bullet or stab wound, and thus form a large flap. Where this large right-angled incision was employed, the results have for the most part been fatal. Before the peritonæal cavity is opened everything should be clean about the wound, all hæmorrhage should be completely arrested, and warm towels and warm irrigation employed over and about the wound and upon the surgeon's hands. The strength of the antiseptic fluid must now be very weak when used to irrigate the incision or cavity. The flat sponges should be wrung out and used at once before they become cool. At this stage of the operation some surgeons recommend paracentesis intestini to relieve the meteorism. This procedure is unnecessary in gunshot or stab wounds of the

abdomen, and is fraught with great danger in peritonitis, for the reason that the intestine, being inflamed, will not contract to close the small aperture, and any suture introduced fails to effect a closure of the altered peritonæal coats. The incision in the peritonæal membrane should correspond with the superficial incision, and should be sufficiently large to permit the free introduction of the surgeon's hand.

The intestine is now to be examined for injury, and as the coils are inspected they should be placed in warm flat sponges, which are called in commercial language zymoca sponges or elephant ears. The practice of using sheet lint or flannel to protect the gut while outside of the peritonæal cavity is dangerous, as particles from the material become detached and adhere to the intestine. The wounds in the gut should be examined and sutured. If the wound is not too much lacerated it should be stitched, using Chinese twist, or silkworm, or cat-gut, or fine carbolised silk. The needle should be curved half a circle, and should be flat from the eye to nearly the point. With regard to the variety of suture to be employed, much diversity of opinion exists. I believe in this question, as in all other like questions, that the simplest method is the best one, provided it is equally safe. I have examined a large number of special sutures, but it seems that the Lembert stitch with Czerny's modification is one which commends itself for universal adoption. The stitch consists of a continuous suture so applied as to bring the peritonæal surfaces into contact; and in order to strengthen the first row, a second row is inserted near it. I have found this to hold in the cases in which it has been employed in stab and shot wounds of the gut. In longitudinal wounds and in transverse wounds, where the parts are not too badly contused, this stitch will be found extremely simple and reliable. If the wound in the gut is so badly contused as to make it necessary to resort to a resection of a piece of the intestinal canal, the same suture can be employed. Great difficulty has been experienced by surgeons in stitching the divided ends of the gut together, on account of the narrow lumen of the

canal, and its free, unattached extremities. Many devices have been suggested to aid the surgeon in his attempts to unite the divided intestine. Frame-work has been invented with clamps to hold the ends *in situ* during the sewing; also dough has been introduced into the open end of the gut, and the other piece pulled over it to hold it in place. An India-rubber bag of sausage shape, inflated with air, has been used, and Dr. Bryan has suggested a gelatine capsule, such as is employed by veterinary surgeons in administering medicine. The capsule is sufficiently firm to serve the purpose, and will after a while completely dissolve. Apropos of this subject I wish to mention a most interesting historical fact that came to my knowledge during the past summer, and the event is one to which much importance can be attached as foreshadowing the possibilities of saving human life, and affording also a valuable suggestion as to the technique of certain steps in laparotomy. This episode occurred over half a century ago, and the person with whom this historical fact is associated still is living. I give verbatim Mr. Weston's own account of the injury, and his operation to restore the intestinal canal, utilising a candle to hold the gut in place while suturing the divided ends.

BREMEN, Maine.

In the latter part of the year 1832, we had a calf about six months old that got hooked in the flank, and for a week or more we were doubtful whether it had caused a breach or not; but finally ascertained it had, and concluded to kill her. But I wanted, like Felix, to wait for a "more convenient season," as we were very busy. About eight or ten days after this, on going to the barn, I found that the manure was coming out of the breach, and decided the time had come to kill her. But while taking breakfast and thinking it over, I made up my mind to try an experiment. Accordingly I prepared myself with a tailor's palm-needle, and cotton twine well waxed with bees-wax, sharp knife, and set about the work, first tying her legs and raising the hind parts above a level, so as to let the inwards settle away from the breach; then cut across the breach in this form +, leaving four corners which I skinned back from the breach. Then came the tug of war; for the inwards came bursting upon me, discharging, I should think, nearly a peck, besmeared with blood; and it seemed impossible to get them back. But on letting her down with the idea of putting an end to her misery, they did not seem to press so hard outwardly, and we concluded to try again and

get them back in place. We then found that they had healed on to the film. We then fleeced them off from that with the thumb nail. We then found where the gut was broken off—rotted off—leaving a mere string to hold it together. We then procured a fine needle and silk, together with a candle, which was cut in two, and the gut was hauled over the same, bringing both parts together, and then cutting off both ends, as they were diseased, bringing the newly cut parts together, sewing them fast, and then putting them back in place; sewed up the film with a whip-stitch, then drew the corners together, taking a stitch to each two corners and tying them,—and the work was done. Her legs were untied, and she got up herself; ate and drank nothing for three days, and then began to eat and drink moderately; and the sixth day, to my joy, the wick of the candle passed off through its natural passage, and she was as good as any of the lot.

(Signed) WARREN WESTON.

The mesentery, if wounded, should also be sutured, and any wound in the peritonæum, produced by a bullet or by the stab of a knife, should also be stitched.

The subject of arrest of hæmorrhage in these penetrating wounds is one which deserves careful study and thought. Even small vessels, which would hardly attract the surgeon's attention when the cavity is open, bleed freely when the cavity is closed after an abdominal section. Great care should be exercised in searching for bleeding points, and they should all be secured by a cat-gut ligature. In regard to large venous trunks which bleed freely, as yet no device has been suggested equal to the emergency. It has fallen to my lot to have met with two cases of severe hæmorrhage from the portal vein in one case, and the iliac vein in the other case. Sponges and towels were buried in a pool of venous blood, the source of which could not be traced owing to the repeated gushes of blood, which would well up from the peritonæal cavity in a continuous and rapid stream. The bleeding veins could not be discovered, so rapid and great was the flow of blood from them. It seems to me that the great thing to be learned in laparotomy is a method of arresting the hæmorrhage from such vessels as the vena cava, iliac veins, and the portal veins; and when this object is attained, laparotomy will be attended with almost uniform and brilliant results.

It is fortunate that wounds of the large venous trunks seldom complicate the other visceral injuries. The attention of the profession should be directed to this one point; and when a sure method is found which will control hæmorrhage from the large veins, laparotomy, as an operation, will meet with unparalleled success. It would seem that some sort of mechanical pressure upon the vessels above, near the diaphragm, and a tourniquet around each thigh, would save enough blood to prevent the patient from being exsanguinated while an attempt was made to secure the wounded veins down in the bottom of the peritonæal cavity. Until one has witnessed a hæmorrhage such as I have described, he cannot appreciate the difficulties of the task; and in the future I shall endeavor to have in readiness some device to check, temporarily, such a hæmorrhage, and some one whose entire attention is to be centred upon this one point during the operation. It is absolutely impossible to find a large vènous trunk which is actually bleeding from the bottom of the peritonæal cavity and behind the peritonæum, unless some means is devised to arrest, for a few seconds, the torrents of blood which well up with such rapidity as to be in no way controlled by sponges or towels. Before the sponge can touch the spinal column to make pressure upon a large vein, the sponge is soaked with blood, and the hand is entirely buried out of sight in a pool of constantly rising blood, until the hæmorrhage overflows the sides of the incision into the walls of the abdomen. Mechanical pressure, directly applied upon the vertebral column to arrest any arterial hæmorrhage from the many branches of the aorta, and the application of a tourniquet to both thighs, may possibly control the bleeding sufficiently for a few moments, until the surgeon can find the bleeding venous and arterial vessels.

Having sutured all the wounds in the viscera, mesentery, omentum, and peritonæum, the next thing in order is the sponging out of the cavity. This should be done in a thorough and careful manner, especially when there has been any extravasation of fæcal matter. The sponges used

should be counted before the operation, so as to make sure that none have been left behind in the cavity. Lawson Tait recommends washing the cavity out by free irrigation of ordinary tepid water. I would advise that instead of ordinary water, distilled water be employed, or, at least, water which has been thoroughly boiled. If any antiseptic solution is used, it must be a very mild one,—say 1 : 10000 of bichloride of mercury, or even a weaker solution than this. It must be remembered that the extent of absorbing surface is very great, and too much care cannot be exercised in so important a matter. Beside the free ablution, followed by a thorough sponging, small crevices, and cul-de-sacs, and under surfaces of viscera should be carefully dried with sponges fastened to long handles. When the wounds are sewed, the hæmorrhages all arrested, and the cavity itself thoroughly dried, the next step is the return of the viscera into the peritonæal cavity. This should be done gently and carefully, and at the same time each segment and coil and viscus should be inspected, to be doubly sure that no wound has been overlooked. Having now replaced the contents, the peritonæal membrane should be sought, and the opening made by the surgeon stitched with a cat-gut continuous suture. Some surgeons recommend that the suture should involve all the tissues, including the peritonæum. In my experience in a number of stab and shot wounds, there is less likelihood of the development of ventral hernia when the peritonæum is first stitched firmly, and then the remaining structures sutured by a continuous stitch, so as to bring each separate layer exactly in apposition. Another advantage in sewing the peritonæal membrane by a separate stitch, is the prevention of any discharge from the incision gravitating into the cavity. The peritonæum unites in a few hours and closes the cavity, and any discharge is thus prevented from gaining access to it. A few stitches of silver in the form of an interrupted suture will hold the parts and prevent the wound from opening in case there is any defect in the cat-gut. These relaxation sutures are very important. The peritonæal cavity should be drained

by a suitable tube, if there has been any purulent peritonitis; but there is no occasion for draining the cavity unless this pathological condition is present. A small red rubber drainage-tube should be put under the skin at the lower angle of the wound, and withdrawn at the expiration of three or four days. Iodoform should be dusted over the parts, and the abdomen thoroughly dried with antiseptic sponges, and a strip of protective placed over the line of incision, so that the antiseptic dressings will not excoriate the skin along the track of the wound. Over the protective a small piece of iodoform gauze should be laid smoothly, and over this some bichloride gauze prepared in the following manner: Two yards of Von Brun's hospital gauze, which has been disinfected, should be allowed to stand in a warm solution of bichloride of mercury (1 : 2000), and then wrung out as dry as possible, and crumpled up in an even mass, and placed lightly over the front of the abdomen: over this some combined dressing or a thick layer of absorbent cotton. A strip of adhesive plaster, about eight inches wide and two feet long, having been rendered aseptic, can now be placed over this dressing and be made to adhere to the sides of the abdomen. This strip should not go around the body, but only be attached to the sides, so that it will yield somewhat in case of tympanites. A broad aseptic bandage can now be used, care being taken not to make firm, but only uniform and light pressure over the front of the abdominal parietes. Too firm and tight compression keeps the anterior abdominal surface of the peritonæum in too close contact with the coils of intestine, and thus favors the adhesion of the intestine to the internal surface of the anterior layer of the peritonæum, or else may cause matting of the coils of intestine upon each other. This completes the technique of the operation of abdominal section, and the patient is now to be carefully placed in a warm bed, and all known means for bringing about reaction should be resorted to without delay. In fact, all these measures should be anticipated, and be in readiness when the laparotomy is completed. The after-treatment, in cases of shot or stab

wound, is to be discussed under question No. 5, and therefore this limits the discussion of the question, "What are the essential features of the technique of laparotomy, including the management of the wounded intestine?"

DR. JOHN B. HAMILTON.

I deeply appreciate the high honor done me by your Association in extending to me an invitation to participate in this discussion. One perhaps should be pardoned for assuming to give an opinion on a series of questions in which so much of importance is involved, and in which the topics have been discussed by such representative surgeons as those named in the programme, when it is considered how few of these operations have thus far been successful. The experience of your speaker in gunshot wounds of the intestines has been limited, so much so, in fact, that he is unable to mention as having occurred in his practice but a single successful case of suture of the intestine for pistol-shot wound. As that case has been fully reported in the "Journal of the Am. Med. Association," and subsequently reprinted in pamphlet form, it is scarcely proper to reproduce it here. The experience gained in that case, however, and in one case of pistol-shot wound which preceded it, was such as to cause me to form certain opinions relative to the proper diagnosis, treatment, and management of these cases.

In regard to *Question I*, "What are the diagnostic signs of the involvement of the intestines in shot wounds of the abdomen?" I have to say, that in my judgment there are no diagnostic signs which occur early enough to warrant waiting their occurrence before surgical interference.

A patient, Lucy Gibson, age 22, was admitted to Providence hospital, April 29, 1884, with a pistol-shot wound of the abdomen, which had been received on the day of admission. The surgeon on duty at the time, observing no diagnostic signs of injury to intestine, allowed her to remain until

the next day, when I came on duty, and by this time tympanites was fully developed in the case, and there was evidently involvement of the intestine. Dr. Parkes, of Chicago, happening to be in the city, saw the patient with me on the afternoon of this day, and advised laparotomy; but it was not done. The woman at this time had no pain other than that apparently produced by tympanitic distention of the abdomen, which gradually increased until her death, which occurred May 2, 1884, three days after the receipt of the injury. At the autopsy it was found that she had four perforations of the intestine. There was no shock on admission, nor pain at any time except as above noted, and such pains as would naturally be due from peritonitis or any other cause. The wound was a very small one, situated a little below and to the left of the umbilicus, at the edge of the rectus muscle. This case, if it proves anything, proves that there may be serious involvement of the intestine in shot wounds of the belly without special diagnostic signs. No artery was wounded by the ball. We may indeed expect severe shock as a sign of internal hæmorrhage when an important blood-vessel has been wounded; but if neither blood-vessel nor the sympathetic ganglion is wounded, immediate shock is not necessarily produced.

Question II. "What should be the first measure of treatment in shot wounds of the abdomen involving the intestines?"

In my judgment the first thing for the surgeon to consider is to determine whether or not the intestines be wounded in a penetrating injury of the abdomen. On the doctrine of percentages, as proved by Professor Parkes's experiment, he may assure himself that the chances are almost all in favor of the intestine having been wounded in such a case, especially where the missile has been fired at short range. But he will wish to know it positively, and in case of small pistol wounds it is necessary that he should use the probe, or enlarge the incision with a scalpel. I am aware, in speaking

of this use of the probe, that it is in direct violation of one of the most cherished maxims of ancient and modern surgeons,—Dr. Chisholm, in his "Manual for the Use of Confederate Surgeons," for instance, stating distinctly that the use of the probe in such injuries is a sure sign of a novice in surgery; but no one has yet pointed out the evil effects of using a probe, and the objection to its use simply rests on professional dicta, without any evidence having been brought forward to show why its use is dangerous. In thus advocating the use of the probe as a means of diagnosis, I mean to confine its use to those small pistol-shot wounds where the finger or a large gum catheter could not be used, and to the flexible, spiral, ivory-tipped probe of Nelaton. No harm can result from the gentle introduction of the instrument through a bullet track already made into the abdomen. The only danger that could possibly follow in this case is the making of new channels, and passing the probe in some direction other than that taken by the ball, which is not likely to happen in the hands of a careful surgeon, who will not push the probe, but let it gently follow the track of the ball in the direction of least resistance. There is no difficulty in making the flexible, spiral probe follow a track, no matter how tortuous it is, until it passes through the abdominal parietes; and if the abdominal wall is penetrated, then the indication for laparotomy is clear and distinct. The proper use of the probe, then, is advised, simply to ascertain if the abdominal cavity be penetrated. In case there should be great shock present, it is a certain sign of wounding of either an important blood vessel, nerve trunk, or ganglion, and exploratory laparotomy is then indicated. The usual remedies for shock, such as the application of external heat, stimulants, &c., are of course advisable in such cases.

Question III. "Under what circumstances, and how soon after the injury, should laparotomy be resorted to in cases of shot wounds of the intestines, and when is the operation contra-indicated?"

Laparotomy should be resorted to whenever the surgeon believes the abdomen to have been penetrated, and it should be resorted to before sufficient time has elapsed to allow fæcal extravasation or fatal hæmorrhage. There is another point in favor of early operations which I think should be noted, and that is the condition of the intestine adjacent to the injured points. In the case operated upon by me, which was in about two hours after the receipt of the injury, there was considerable hyperæmic redness about each wound. The intestine, however, had its pearly white color at all other parts, and it did not begin to be congested throughout until near the close of the operation. This line of congestion is a very important guide to the number of openings, for it was true in this case that all those uninjured parts of the intestine were entirely normal in appearance. Had a few hours more elapsed, the intestines would have been congested throughout the entire tract, and I should have been deprived of that guide to the location of the wounds. Farthermore, it is obvious that fæcal extravasation must result unfavorably to the patient if the wounds remain open for any length of time; and in the case of wounded blood-vessels, it is imperatively necessary that they should be secured at the earliest moment. In regard to the contra-indications for operation, in my opinion the operation is contra-indicated after the lapse of forty-eight hours from the receipt of the injury, where the patient is in a state of collapse from internal hæmorrhage, and where active peritonitis involving the intestines is present.

Question IV. "What are the essential features of the technique of laparotomy, including the management of the wounded intestine?"

Concerning the technique of laparotomy, I do not think it differs in any material degree from ordinary laparotomy, except that part of the operation relating to the management of the intestine. It is premised that the belly will have been shaved, and washed with bichloride of mercury solution in order to insure cleanliness; that the usual antiseptic precau-

tions shall have been observed in regard to the hands of the operator and the instruments. Towels wrung out of hot water should be kept frequently applied to the lower portion of the thorax, and over the stomach, and over the hypogastric region. On opening the abdomen the cavity should be inspected first for bleeding vessels. If none are observed, the omentum should be gently raised before drawing out the intestines, for the same purpose, securing any bleeding points that may have been observed, being careful to stop the hæmorrhage in the smallest abrasion of the mesentery, bearing in mind the ill effects of leaving an abrasion untouched. In the successful case which I have heretofore mentioned, it will be remembered that a pelvic hæmatoma formed as a result of failure to observe this rule; and although the patient recovered, yet it was a complication that might possibly have been prevented. The intestines should next be drawn up, loop by loop, with the fingers. I do not believe that instrumental pressure can be so well regulated as the fingers of the surgeon. Padded forceps, I therefore conclude, are an unnecessary refinement. The intestines as they are drawn out, loop by loop, with the fingers, should be allowed to remain on a towel wrung out of hot mercuric bichloride solution 1 : 4000 in strength, and covered with another towel similarly wrung out. When wounds are found, they should be stitched as fast as discovered; and in the stitching I think it quite necessary to reduce the pouting mucous membrane, which projects through these wounds precisely as the mucous membrane of the bladder projects into the vagina in case of vesico-vaginal fistulæ: there is the same velvety, pouting surface. This should be carefully pushed back into the intestine, and the peritonæal surface of the intestine brought together by Lembert's suture.

As one is apt to praise the bridge which carried him safely over, I am inclined to think no better ligature for this purpose can be devised than the ordinary catgut of small size, which is to be cut off short, and introduced in sufficient number of stitches to insure the complete closure of the wound.

Having done this, the incision should be closed as in other cases of laparotomy. But the incision should not be closed until the cavity of the abdomen shall have been thoroughly cleansed.

With this I conclude my remarks, expressing at the same time to the Association my regret that my limited experience does not enable me to give greater reference to cases of my own.

QUESTION V.

WHAT ARE THE BEST METHODS OF AFTER-TREATMENT IN CASES OF SHOT WOUNDS REQUIRING LAPAROTOMY AND SUTURE OF THE INTESTINES?

Discussed by

Charles B. Nancrede, M. D., of Pennsylvania.
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DR. CHARLES B. NANCREDE.

The best after-treatment for cases of gunshot wound of the intestine, for which laparotomy has been performed, should be considered under three different heads, viz.,—

1. When peritonitis does not exist at the time of operation; in other words, when a primary operation has been performed.

2. When incipient peritonitis does exist at the time of operation, *i. e.*, a secondary operation; and

3. When, despite all our efforts, or due to some neglect in technique, peritonitis develops after operation.

Of course in all cases antiseptic methods of dressing should be continued.

Under the first conditions, a recumbent position, with flexed knees, seldom changed,—and then not by the patient's efforts,—should be insisted on. Alimentation must be carried on by the rectum entirely, when possible, for at least forty-eight hours, and in some cases even longer when the stomach is irritable. At the most, cracked ice and small quantities of beef peptonoids should be given when the rectum rejects enemata, or when feeding by the mouth is begun. The higher up the canal the wounds are, the more imperative the rectal feeding becomes. At the end of a few days,

larger quantities of food may be given. Should tympany occur to any extent, the rectal tube and enemata should be tried. If masses of fæces are present, or suspected to be lodged in the colon, about thirty grains of inspissated ox-gall dissolved in some mucilaginous vehicle should form the enema, and will sometimes relieve severe tympanites where an ordinary injection will fail, owing to the occlusion of the gut by fæcal plugging.

When incipient peritonitis exists at the time of operation, with the probable formation of large quantities of acrid, septicæmic or sapræmic inducing serum, precisely as in similar conditions after ovariotomy, drainage should be instituted. When possible, the tube should be of glass, and have its end kept well down between the rectum and bladder in the male, or in Douglas's cul-de-sac in the female. Presupposing that a primary careful toilet of the peritonæum has been made, the tube should be periodically emptied by a syringe with soft rubber tube attached, the syringe kept aseptic, and tube corked with some iodoform cotton. Should the discharge have been, or become, large or purulent, careful irrigation with a weak bichloride solution, or if this is feared, boracic acid solution, should be resorted to.

To favor drainage, a lateral or semi-prone position, with flexed limbs, changed by the nurse from time to time, is to be advised.

The rules governing the exhibition of opium, stimulants, and the use of cold, will be presently mentioned in detail; but it must be steadily borne in mind that neither much food nor alcoholic stimulants will be needed, since the patient will either die or recover before exhaustion, demanding large quantities of aliment or alcohol, comes on. As will presently be explained, atropia is better than alcohol for the shock of commencing peritonitis, or the "exhaustion" of the later stages, *i. e.*, the depression of the nerve centres, especially those of circulation and respiration.

When peritonitis develops after the operation, our initial treatment must depend on whether it comes on gradually, or

suddenly. When the latter occurs, if there be any evidence of shock,—as does occur at times from vaso-motor paresis, shown by an apathetic semi-conscious condition, with extended limbs, pinched features, and a weak pulse,—opium in large doses will probably prove fatal. Here small doses of morphia with atropia will relieve pain and stimulate the heart. The heart itself should be examined by auscultation, since this may demonstrate that its action is really feeble, while the pulse is hard and wiry. Now, under such circumstances, the pain is often severe; but large doses of opium, unless combined with atropia or digitalis, are very dangerous. I say large doses, meaning by this those ordinarily recommended for peritonitis in the text-books.

Later on, owing to asthenia, the recumbent position, and the compression of the lungs by tympanites, hypostatic pneumonia is apt to develop, when the improperly aerated blood partially paralyzes the respiratory centres. In this condition morphia must be very cautiously given, or, better, withdrawn; and it always should be used in combination with atropia, ammonia, or digitalis. Stimulating hypodermic injections and revulsives, such as dry cups to the lungs, are indicated. In a case of peritonitis which develops more gradually, as Burchard points out, the ideal condition to be obtained by opium is freedom from pain, irrespective of the quantity of opium exhibited; and when this is secured a patient falls asleep, but can be readily aroused. It would better always be given as morphia, and hypodermically, since opium by the mouth is not always absorbed, and may be unchanged for days, to be suddenly taken up in fatal quantity. "In the later stages of peritonitis, especially when the heart and lungs fail and when gastric regurgitations and hiccough are rapidly exhausting the patient's vitality, one or more hypodermics of atropia, varying in strength from one sixtieth to one tenth of a grain each, either alone or in combination with morphine, digitalin, ammonia, or alcohol,"[1] according to indication, will at times save an otherwise hopless case.

[1] Burchard, "New York Medical Journal," Aug. 15, 1885.

Are there any means which will directly affect the vascular processes involved in a peritonitis? We undoubtedly possess two powerful ones. Free leeching, done at the commencement of the attack, or when it has not progressed far, supposing that the patient has not lost much blood from the accident, is of signal benefit. This I have witnessed at the bedside of patients, and also experimentally proved, as may be gathered from my observations on blood-letting published some years since. Cold, by means of the ice-coil to the abdomen, is a second means of controlling peritonitis. Cold applied to a peripheral sensory nerve has been shown by physiological experiment to control the afflux of blood to those parts supplied by the vaso motor nerves which inosculate with such sensory branches. In the present instance, the nervous circuit consists of the lumbar nerves, supplying sensory filaments to the abdominal parietes, and the branches of the solar plexus which supply the intestines and peritonæum. Cold applied to the former nerves,—*i. e.*, to the abdominal wall,—will therefore cause contraction of the blood-vessels of the peritonæum and intestines. It will do more; for it lowers temperature, relieves tympany, and calms the nervous system. If, by any chance, the sutures have failed and gas be in the cavity of the peritonæum, aspiration may be tried as suggested by Burchard,[1] to whose admirable paper I am much indebted for useful facts, and for confirmation of my own observations.

In such a case, however, I should be more inclined to reopen a portion of the laparotomy wound, introduce a drainage-tube, and freely irrigate the peritonæal cavity with an antiseptic solution. Should persistent and rising temperature, despite the ice-coil, etc., be present, without the local signs of peritonitis, I should suspect the presence of some fluids which, generating ptomaines, were being absorbed and producing sapræmia, *i. e.*, septic intoxication as contra-distinguished from septicæmia. In such an event, the reopening of one angle of the wound, free irrigation of the abdominal

[1] Burchard's advice refers to cases of abdominal tympany arising from perforation of the bowel from disease.

cavity with mercuric bichloride, and the retention of a drainage-tube, managed as I have already indicated, would perhaps save some otherwise condemned patients. In the same way, should septic peritonitis arise, with probable effusion of considerable quantities of fluid—such as are often found after death—I should strongly advocate a similar plan of treatment. Owing to the anatomical position of the kidneys, they are liable to become involved when the peritonæum is inflamed: hence the use of turpentine stupes for tympanites is to be deprecated. And Burchard states that "more than once has the timely application of cups and a digitalis poultice over the kidneys saved for" him "the life of a patient who was insidiously developing a nephritis." Daily examinations of the urine should therefore be made, since retention of the urinary excreta in Bright's is a well known cause of peritonitis. Digitalis in some form, and perhaps other diuretics, are also peculiarly indicated in the sapræmic condition, to aid in the evacuation of the poisonous ptomaines; for if none of these products are allowed to remain in the peritonæal cavity, and those already absorbed can be eliminated, recovery will often ensue. I can hardly conceive, as I have already said, of a case of traumatic peritonitis living sufficiently long to develop enough true exhaustion to demand large quantities of food and stimulants; but should this occur, of course the experiment must be tried, but the stomach will probably rebel. I am sure that what would be a deficient amount of aliment for one in health would better be the rule in these cases of traumatic peritonitis, all the more as they generally occur in those who are in robust health. As I have already said, I am opposed to operating when advanced peritonitis is present. If it were possible to determine beforehand that only one perforation existed, a laparotomy might be done, and, provided the injured loop of bowel could be found and secured to the abdominal wound and free drainage instituted, good might accrue; but my experience of laparotomy for diffused peritonitis following rupture of the bowel, and for ball wounds, teaches me that it is

extremely improbable that we should be able to find the wounded bowel without excessively prolonged manipulation; that if more than one perforation existed, the gut would be in no condition to suture; that multiple perforations would be so situated that all the loops of injured intestine could not be secured in the abdominal wound;—and if not all, what good can the operation do? And finally, that neither free drainage, nor an effectual toilet of the peritonæum, could be secured.

DR. CHARLES T. PARKES.

Allow me first to express my appreciation and acknowledgment of the great honor conferred upon me by the invitation sent me by the Chairman of your Committee of Arrangements, Dr. J. W. S. Gouley, to participate in the discussion to-day on shot wounds of the intestines. The subject is of great interest and importance; and let me hope that the little I shall submit may in some way help to round out the great good that will come from the consideration of this subject by men of such repute and experience as compose this body.

There are so many associate injuries produced by a bullet traversing the cavity of the abdomen, in addition to shot wounds of the intestines, that it seems impossible to do otherwise than refer to them, even at the expense of being accused of wandering from the subject in hand. If I am guilty of any such fault, I hope the reference will be of such importance as to justify the digression.

Question I. "What are the diagnostic signs of involvement of the intestines in shot wounds of the abdomen?"

The necessity for, and it may be said the hopefulness of, immediate surgical interference in these injuries is a question of such recent interest to the profession, and the consequent number of cases are so few, that sufficient data have not been supplied from which to formulate any very exact rules of diagnosis.

It seems proper, in forming the diagnosis, to make careful

inquiry into the size (or calibre) of the fire-arm, the direction of the missile at the moment of impingement on the body's surface, the distance at which the fire-arm is discharged, and the shape of the bullet.

It is certainly true that bullets from fire-arms of large calibre are least likely to glance, and are therefore more likely to destroy any organs touched by them; still, the smallest calibre missile at short range, with a wound of entrance almost closed to the passage of an ordinary probe, will many times carry destruction to underlying loops of intestines and death to the patient, unless the damage is repaired by the surgeon.

Again: Great obliquity of impingement of the bullet argues probability of its deviation in its course between the muscular layers of the abdomen, beneath the skin, or even just gouging a track in the peritonæum without injury to the viscera. The following illustration of a glancing bullet came as an early professional experience: A thief, in escaping arrest, was shot in the back with a forty-four calibre revolver. He was running at the time, and fell as the bullet struck him, but immediately jumped up and escaped from his pursuers. He came to the hospital early the next morning. The wound of entrance was found four inches to the right of the spinal column, close below the twelfth rib. The bullet was felt, and removed from just beneath the skin close to the umbilicus. The man had no shock, and no tenderness of the abdomen. His bowels moved normally. He never developed any symptoms whatever, and left the hospital on the second day. It was a clear case of a lucky thief.

In my opinion, close body shots from arms of whatever calibre, with accompanying signs of perforation, will always demand immediate and unhesitating relief by abdominal section. Round bullets at ordinary range will always be least likely to do bad injury, and wounds made by them will require all corroborative testimony before hesitation as to action will be overcome.

Farther, it must always be borne in mind that the fire-arms of the present day possess tremendous penetrating force. So

true is this fact, that penetration of the abdominal walls almost certainly means perforation. Therefore it is my belief that the surgeon should come to these cases thoroughly impressed with the conviction that he will be required to operate, and be deterred from so doing only upon the most convincing testimony in favor of non-interference.

Severe pain, deep-seated, referred to the cavity of the abdomen, together with tenderness upon pressure, although frequently present, cannot be classified as indicative of perforation. When found accompanying other more pathognomonic symptoms, they serve to confirm the diagnosis of perforation.

Hæmorrhage of free character from the external wound, if the wound is not in the course of the deep epigastric artery, is pathognomonic of injury to some large abdominal vessel which cannot be secured without abdominal section. Circumscribed flatness with the peculiar non-elastic feeling belonging to all hæmatoma, without much external hæmorrhage, indicates internal bleeding requiring the same method of relief. It has been my lot to see one such case as this, in which the coagulated blood was piled up just under the wound of entrance, making a tumor of large size of easy recognition. Of course in either of these conditions, whether of external or concealed hæmorrhage, there will be present in the general condition of the patient unmistakable evidence of what is transpiring. Who can fail to recognise the symptoms indicating extreme loss of blood, whether that blood be seen or not? What symptoms can speak louder or more imperatively for relief than they? The divided artery or voluminous vein requires a ligature, and it most be uncovered before this ligature can be applied, and therefore abdominal section must be done to meet the requirement of this accident.

Vomiting of blood may be considered a positive sign of perforation of the stomach. Still, there are exceptions to this rule. I have seen an abrasion of the peritonæal covering and the muscular coat, but not perforating the mucous coat, accompanied with vomiting of quite an amount of blood, no doubt coming from capillary bleeding in the bruised mucous coat.

Bloody stools would be diagnostic of perforated intestinal walls. The extrusion of any of the normal contents of the viscera of the abdomen is absolutely pathognomonic of perforation of that viscus. This is very seldom found present as a sign in the early history of these injuries. Still it has been found present in cases in which the wounds are large and the course of the missile very direct. The condition is not unusual as a late symptom of the injury.

The rapid occurrence of meteorism, either local or general, is only to be explained by the existence of perforation and the escape of intestinal gases. Ordinary tympany is the result of loss of tonicity in the intestinal walls, and is of comparatively slow development. It is a later symptom belonging to the establishment of peritonitis. Deep-seated emphysematous crackling on palpation testifies to the escape of gas through a perforation, and is a valuable corroborative sign.

Severe injury to such important viscera cannot fail, and I believe never does fail, to rapidly bring about a well marked constitutional impression in the condition of pronounced shock. Guardedly estimated, and giving due weight to the temperament of the individual, shock certainly is a trustworthy and valuable guide as to the probability of perforation. During the past winter I was called to assist in an operation for supposed perforating gunshot wound of the small intestines. The patient was a lad of seventeen years, who twenty-four hours previous had accidentally shot himself in the right lower abdomen with the smallest size dynamite cartridge, twenty-two calibre bullet. The external wound was very small. As illustrated by the lad, the direction of impact was very oblique. From the wound of entrance a line of extreme tenderness could be traced for the distance of three or four inches upward and outward, evidently the track of the bullet. He had shown no evidence of shock whatever from the first. Although for certain reasons I was rather expected to counsel operation, my advice was for non-interference. I could not find a single sign of penetration or perforation, especially no shock. The lad was well in a few days. I cannot bring

myself to believe that well marked shock is ever absent when the severe injury of perforation has happened to the intestines. Abdominal section adds little to the danger of life when perforations are present, and provides for the best method of treating the injury. If a mistake is made and no perforations are found, it is not subjecting the patient to any greater danger than patients pass through in many other surgical procedures for diagnostic purposes. I do not believe that the procedure would be at all as likely to cause death as that incidental to the use of general anæsthetics, now so freely used, and under all circumstances.

Question II. "What should be the first measures of treatment in shot wounds of the abdomen involving intestines?"

When we remember how very unusual it is during post-mortem examinations, even after little food has been ingested for weeks, to find the small intestines absolutely empty of fæcal matter, the assertion that it is the rule for extravasation to occur after intestinal perforation, is rendered highly probable. Experimentation makes the probability a certainty. Again: It is a very common occurrence for a bullet to carry particles of clothing or other articles with it into the track made into the soft part, and the same result follows the passage of the missile through the walls and lumen of the intestine. It carries with it particles of fæcal matter free in the tube, or smeared over its internal surface. Therefore nature's provision, so called, against extravasation,—immediate eversion of the mucous membrane through any opening in the walls,—is not surely efficacious to prevent the baneful results following the presence of fæcal matter in the peritonæal cavity. The results of examination after death from perityphlitic abscess, or perforation in typhoid ulceration, rather confirm the supposition that even the escape of intestinal gases is sufficient cause for the production of fatal peritonitis; at least many such cases fail to show any evidence of the presence of the solider contents of the intestines. My experience in shot wounds absolutely confirms the assertion

that extravasation is surely followed by peritonitis of the severest type. The first measures of treatment in shot wounds would embrace such care in moving the patient or in his movements as will be least likely to increase the danger from extravasation. If operative measures are decided upon, such measures should be carried out, if at all possible, where the wounded man is found. The probabilities of recovery will be certainly lessened if the patient is jolted for miles, or even blocks, in attempts to make the situation more pleasant, if for no other reason than the increased likelihood of extrusion of fæcal matter from all motion. Absolute rest should be enjoined, and its practice insisted upon. The determination not to interfere surgically, to await manifestations of inflammation, or to let nature alone take care of the injury, can succeed in saving the patient only upon the adoption of some similar course of action. When the patient must be moved, provision should be made to have this done in the gentlest manner possible, avoiding shocks of all kinds, and the patient carefully instructed to remain absolutely passive.

If the surgeon is still in doubt as to the probability of perforation, after passing in review the signs already given, he should incise the abdominal walls in the course of the bullet wound sufficiently to confirm or disprove the fact of penetration. This procedure would do but little damage, and demonstrate absolutely the true condition.

Question III. "Under what circumstances, and how soon after the injury, should laparotomy be resorted to in cases of shot wounds of the intestines, and when is the operation contra-indicated?"

Categorically answered, the reply to this inquiry might be very brief. First: Under any and all circumstances in which, reasonably satisfied that perforation had occurred, there seemed the slightest probability that the patient would not die during operative procedures. There will at all times be many cases in which complicating injuries, in addition to perforation, stamp the case at once as beyond any aid from the

surgeon's hand. There is no time for interference so precious as that immediately after the occurrence of the accident, to save loss of blood, to prevent extravasation, and to reduce to the minimum the hurtful influence of matter already extruded. The time, then, for operation would be, if operation is to be done at all, just as soon as the patient's condition will allow and the surgeon's preparations can be made. The same rules will apply just as safely in these wounds, as govern the surgeon's actions in all other accidents of a serious character. If a patient is bleeding to death from a divided femoral or brachial artery, there is no hesitation in the surgeon's mind as to what he must do, and do promptly. He scarcely even thinks of the patient's general condition. I see no reason why there should be any hesitation because the blood shows itself through a wound in the abdomen, or is still as certainly flowing but concealed by the walls of that cavity. Second: In all cases, as a "dernier ressort," in which indications of suppurative peritonitis present themselves after it is determined for any reason not to adopt surgical measures in the first instance. The cases of recovery published, following abdominal section for intestinal perforation in the later stages of typhoid fever, and other instances of perforation, although few in number, justify the advice. Certainly the patient's chances for recovery are greatly enhanced if the offending matter can be let out and the peritonæal cavity cleaned.

If perforation of the intestines is present, there can be no contra-indication to the performance of laparotomy. Even in the most favorable of these injuries, those in which the large intestine alone is injured, in which the external opening is free and correspondingly ready exit is given to extravasated matter, laparotomy at once would save the patient from much suffering for days, or weeks, or months, during which life is imperilled and so often lost, as well as often obviate the disgust and distress attending the presence of a fæcal fistula. An obviously fatal wound, as displayed in the patient's general condition, is the only absolute indication for non-interference.

Question IV. "What are the essential features of the technique of laparotomy, including the management of the wounded intestines?"

Any surgeon who will take the time to make a trial on the cadaver will soon convince himself that an incision through the linea alba is the only one that will give complete and perfect control of the entire cavity of the abdomen, and consequently insure a certainty of bringing all the injured organs under inspection, so that they can be subjected to proper surgical treatment. The surgeon who does not give heed to the propriety, in fact, necessity, of making this incision in treating the injuries under discussion, will certainly fail to accomplish the purpose of surgical interference, and fail to relieve the patient. Within the last year I have seen two cases in which the operator in charge failed to accept this, to me, absolutely necessary requisite to success. In both, the incision through the abdominal walls was made to include the entrance wounds of the bullet;—in the first, some few inches from the median line, and not free; in the second, on the extreme lateral surface of the abdomen, and very free—in fact, longer in inches than the distance from sternum to pubes. It is my belief that both were made under the delusion of past teachings, to enlarge the wound of entrance of the bullet.

In the first, post-mortem examination brought to light extravasated fæcal matter and decomposing blood that had not been discovered during the operation, together with a large sized undiscovered and untreated perforation of the intestines.

In the second case, the signs were plain and outspoken that the man was fast failing from hæmorrhage. Notwithstanding the unusually free incision, the wounded vessel could not be found, was traced to the opposite side of the cavity, and could not be uncovered. Only two simple perforations were found in the ileum, easily and quickly closed: the bleeding killed the patient. It is neither fair nor just to classify such cases as these, as has been done, as trials of operative relief for perforating gunshot abdominal wounds. To me, no case

is treated fairly in which the central incision is not practised, ignoring entirely the bullet openings unless they are in its course.

After the primary incision is made, the next most important procedure is to secure all bleeding vessels, either permanently with silk, or temporarily by compression forceps. In all probability, in order that this may be promptly done, it will be necessary to draw out through the incision all of the small intestines. To provide for their reception, towels soaked in thoroughly boiled water, slightly carbolised or not, should be arranged in which to infold them. To bring them out easily, and with the minimum damage to them, requires that the first incision should be free;—certainly less probable hurt will be done to the intestines in this way than by futile attempts to hold them, or push them out of the way while in the abdomen, to say nothing of the blundering and delay accompanying such attempts in a deep and frequently dark cavity filled with blood. When the bleeding is controlled, the cavity should be thoroughly cleansed of clots and other deleterious matter by free washing with boiled water kept properly warm. After this, wounds in the large intestines and other viscera can be readily found, and subjected to the treatment found necessary. During these procedures the small intestines have remained covered with warm towels outside of the cavity, with bleeding points in them controlled, if necessary, with compression forceps applied as the tube was first drawn out of the cavity. Now the whole tract should be carefully but rapidly passed through the thumb and finger, and all surfaces minutely inspected for injury. As soon as examined, the portion uninjured should be carefully cleansed and returned into the abdomen. If perforations or other injuries requiring surgical care are met with, that treatment should be applied at once and perfectly, so that when the whole tube has been gone over, the operation is done with and the abdomen can be closed. I am quite sure that jumping from one thing to another, here closing a perforation and there tying a bleeding vessel, causes delay, and increases the

danger of overlooking, perhaps never finding, deadly injuries. The settled plan, regularly carried out, is the most sure and most certainly successful.

How shall the wounds of the tube be treated? Simply, and I am quite sure safely, by turning or inverting the edges of the wound towards the lumen of the bowel, and suturing together broad surfaces of the peritonæal coat surrounding the perforation, over the wound. The suture is of course the application of the well known Lembert's intestinal stitch. I think the included portion of peritonæal coat should be quite as broad as the size of the wound and the calibre of the tube will permit. The perforated wound should be rendered linear by pulling in opposite directions with blunt hooks, and then stitches can be rapidly and easily applied. In my experience a double row of sutures is entirely unnecessary: their application consumes time precious to the patient in view of increased shock, and will not make the wound any more secure. I have yet to see the intestinal wound which would not hold against heavy hydrostatic pressure from within after the lapse of from six to twelve hours, when the single stitch has been used. The best needle is the small round needle, either curved or straight. Pure silk, calibre No. 1, is entirely trustworthy, and better than any other material. The stitches have always held with me when applied at intervals of one eighth of an inch from each other. The bite of the needle ought to take up more than the peritonæal covering, and should, if possible, fall short of including all of the mucous coat, otherwise the needle and thread enter the cavity of the intestinal tube, and, as a bare possibility, might be followed by enough extravasation to set up peritonitis. Bullets travelling with great velocity make wounds comparatively clean cut, while those of diminished velocity are more apt to lacerate and irreparably destroy portions of the tube struck by them. Following the first, I believe the very large majority of the wounds can be safely and securely treated by the surgeon, by means of inversion and sewing over the peritonæal coat as before described. Following the

latter, quite often a complete resection of the wounded part must be made, causing great delay, enhancing the patient's danger, and increasing the gravity of the prognosis. When resection is required, the fingers of an assistant make the best clamp, sure to do no damage to the tube, securely keeping back the intestinal contents, and greatly aiding the operator in the application of the sutures of retention. These should be applied in just the same way around the entire circumference of the tube, as has already been described for perforations. At the closing of a resection it is always best to first fasten the edges next to the mesentery, passing from it in both directions as the successive sutures are introduced. In many cases of perforation the continuous linear or the purse-string suture can be most rapidly and advantageously applied. Oozing from abrasions anywhere following gunshot injury calls for application of the methods of control adopted in abdominal surgery, and should receive the same careful consideration. If there is much oozing present or liable to occur, drainage should be provided for, otherwise none is required. The abdominal wound must be closed in the ordinary way, always having in view the prevention, if possible, of subsequent ventral hernia. It has never been necessary, in my experience, to give any special care to the bullet wounds in the abdominal walls: if undisturbed, and subjected to the same dressing as is used in the central incision, they have invariably done well.

One caution may not be out of place: In tightening the sutures used to close the intestinal wounds great care should be practised in the amount of force applied in fastening them. In the ever present desire to get perfectly tight wounds, there is great danger of making them so taut that the included tissue will slough. If the opposed surfaces of peritonæum are fairly and evenly held together, without much pressure, for a few hours, they will glue together sufficiently firm to hold secure the spaces between the sutures.

Notwithstanding the fact that wounds made in the intestines by the transit of a bullet through the abdomen will in

the majority of instances be safely secured by the methods already mentioned, there will at times occur injuries that will not be properly treated short of a resection of the entire calibre of the gut. Among these will be cases of total destruction of the tube, cases in which many perforations occur within a short distance of each other, and cases in which the perforation takes place across the mesenteric junction of the bowel, accompanied with separation of the mesentery. It is a fact to be remembered, that the collateral circulation in the intestinal tube itself is not sufficient to maintain the vitality of any considerable length of the tube when the mesenteric attachment has been severed. It is certainly necessary to so close all slits in the mesentery as to leave no open surfaces free towards the peritonæal cavity to discharge their secretion into it. It is best to cut away badly bruised or lacerated omentum or mesentery, and to bring the freshened edges together with sutures.

Question V. "What are the best methods of after treatment in cases of shot wounds requiring laparotomy and suture of the intestines?"

The general principle of absolute rest in every way must be adhered to. Opium to control pain and quiet peristalsis is certainly indicated. Milk will be found to be the most reliable fluid nourishment; solids of any kind at first I think rather hurtful. The benefits and usefulness of rectal alimentation should be remembered. High temperature should be reduced by the use of the ordinary remedies, among which I think the best is the use of cold applied externally. If the temperature does not go beyond 102° no interference is required.

Dr. Wm. S. Tremaine.—I have really very little to add, because so much has been said by the gentlemen who have already spoken. I regret that the discussion was not more general, and that other gentlemen, not especially selected beforehand, had not an opportunity to discuss the paper. The only remark I have to make now is to express my disapprobation of the unanimity of the opinions set forth. There was really no discussion, for

everybody seemed to agree, as if by concerted action. I should have liked to hear more difference of opinion. To quote a remark which I heard from a friend, "It is a fearful thing to be believed." It is a great responsibility for a man to undertake to teach. I wish to utter a word of warning about indiscriminate laparotomy. It is time to call a halt in the line of abdominal section. I believe that a number of lives which are now sacrificed might be saved by judicious interference; not all, but some. If it be only one out of a hundred, we have made some progress. I do not want to be understood as advocating opening the abdomen every time a shot wound is found. I want also to say—and if there are any present who have not especially studied this subject and are not familiar with it, it may be that on the day they get home they will meet with such a case and will find great difficulties in the technique of the operation—that every one should study carefully what Dr. Parkes has said. A great deal that he said I intended to say. I wish to pay this tribute to Dr. Parkes. I am afraid he has not received as much justice in connection with this matter as he ought to. I believe he has made decidedly the most valuable contributions that have been made to this subject in the English or any other language. The more you study what he has said, the more you will be convinced of its value. The assertion is made that operations on animals give us no guide for operations on human beings. They do give us a great guide. We should make very little progress indeed if it were not for work of this kind. As regards the percentage of recoveries, we cannot draw estimates from experiments on animals; but as regards results, a great deal of information can be obtained. I am gratified to be able to pay this tribute to his work.

ADDRESS ON MEDICAL JURISPRUDENCE.

By Simeon Tucker Clark, M. D., of Niagara County.

November 17, 1886.

In the twilight time of human history,—that period usually denominated the patriarchal age,—the father of a family not only exercised paternal care and authority over his descendants, but was in every case the executor of laws, either enacted impromptu, or those of his own previous legislation. So long as this kind of compact was not extended beyond the third, or to the farthest limit, the fourth generation, the natural affinity of blood relationship, the rectitude of an innate philoprogenitiveness, were sufficient to ensure the most perfect justice and equality, rendering the patriarchal government almost a miniature theocracy.

Ruskin says,—"A pure and holy state of anything is that in which all its parts are helpful, or consistent. The first and highest law of the universe, and the other name for life, is help. The other name for death is separation. Government and coöperation are in all things and eternally the laws of life and perpetuation. Anarchy and competition are eternally and in all things the laws of death and disintegration." So it was in the primitive states of government: helpfulness and a proper division of labor gave some employment to each member of the family, and usually that which was most congenial to individual tastes and best suited to their capabilities. But this pristine perfection could not long be perpetuated. The elements of change were always present. Men are gregarious animals, and will herd together in communities. Again: The universal principles of natural selection and the survival of the fittest were factors in the development of a new and more advanced order of society. Those patriarchs who were of the most vigorous type were in every case the

most prolific, and they and their progeny the best calculated to withstand the evil consequences that must always follow the intimate association of any considerable numbers, such as personal accidents, the ravages of contagious diseases, and the depletion by famine. They were also better equipped against the vicissitudes of the elements, which have ever been at war with man, and which man has only overcome by the power of his invention and superior mental endowment. The large families grew larger, not only from natural increase of progeny, but through additions from without. The strong leaders could occupy more territory than the feebler; were richer in flocks and herds; possessed superior facilities for defence, and hence were an asylum to the weaker in times of common peril.

In this age the loss of a chieftain, to any small clan, was to render that family an easy prey to stronger neighbors: therefore, in such an event, a patriarch of known wisdom and justice was frequently made the father of many sons and daughters by adoption; and hence the strongest tribes were the outgrowth not only of propagation and conquest, but of voluntary surrender for the sake of protection. From this community of interest grew the commonwealth, and from the commonwealth the common law,—first, the *Lex non scribenda*, which was but the verbal narration of the wisdom of the fathers preserved as traditions and handed down to succeeding generations; and afterward the written law.

From the days of unwritten law to the time of enacted statutes, not only was the government in the hands of chieftains, but also the administration of the rites of religion, and the practice of medicine and surgery. A little later these were separated, and thenceforth it became a question which should receive the greater honor,—the king, or the medicine-man who was both priest and physician. Among savage and barbarous peoples of the present time, a similar division of service prevails; and it is said that in our own country, in the days of the Pilgrims, Philip—chief sachem of the Wampanoags—once said of his principal pow-wow, called by name

Anawan,—"This Anawan is mightier than Philip, for in his conjurations are the issues of life and death."

To one who was theologically inclined, it would be both a profitable and an agreeable task to study the medical jurisprudence of the Bible from that day

> When Moses, cradled by the sedge-grown Nile,
> Saw the Egyptian princess sweetly smile,
> And raised his joyful hands, that quickly pressed
> Her zoneless, dusky, roseate, virgin breast;
> And by that touch, empowered of Heaven above,
> Transformed a maiden's to a mother's love.

From that day when, by accidentally becoming the son of Pharaoh's daughter and heir to Pharaoh's throne, Moses was placed in the schools of the wondrous lore of Egypt, and was thus enabled to open the fountains of Oriental wisdom to the Hebrew nation as perfectly as when, with prophet staff, he smote the rock at Horeb, and the waters gushed out for the thirsting multitudes,—from that day, until this broad, deep stream of ancient learning culminated in the wisdom of King Solomon, law has stretched out its imploring hands to medicine for aid. From the time of Abraham to Moses, from Moses to Solomon, are periods of sacred history replete with information for the medical jurist.

When the Roman code was epitomised by the wise Justinian in the sixth century, the relation of medicine and surgery to law was not overlooked, but shared the crudities as well as the merits which those several systems then possessed. Previous to this time, and subsequently, all vexed questions of this nature were referred to the precepts of Hippocrates, who was born 460 years before Christ, and whose death and burial were never suffered to be matters of record, that it might appear to the credulous that he had been recalled to the company of the gods, from whom he was believed to have come to impart a knowledge of the healing art to man.

After a rational study of human anatomy began, in or about the first or middle of the fourteenth century, and the

compilation of the Carolinian code of criminal law in 1552, the science of Medical Jurisprudence took form.

Charles V, emperor of Germany and king of Spain, caused an edict to be passed that no magistrate should decide any case in which a question of violent or mysterious death, peculiar pregnancy, birth, or infanticide might arise, without first obtaining the opinions of living, learned, and unprejudiced medical men. This was the first blow to the traditions of Hippocrates. In 1597, Condronicus published at Frankfort a tract entitled *Methodus Testificandi*, and in 1598 an Italian—Fortunatus Fidelis—his treatise, *De Relationibus Medicorum;* but neither was apprised of the other's work, and it is a matter of great doubt if either saw the other's book at all during their lives. In 1620, Paulus Zacheus, the father of modern Medical Jurisprudence, published his *Questiones Medico-Legales*,—and a most comprehensive work it was. This same Zacheus, who is frequently miscalled Bacheus, was physician to Pope Innocent X. He was also archiater and protomedicus, in which capacity he was called to render opinions in the highest administrative commission of the papal states—that of the *Rota-Romana*, the final tribunal of appeals, composed of twelve princes of the church. His five great tomes are a succession of questions which from time to time arose in the *Rota*, together with his answers to the same; and although his work partakes of some of the absurdities of his age, yet for the most part it is worthy of the attention of scholars of to-day. From the time of Zacheus nothing was written that surpassed his work, although Marc, Ambrose Paré, and Fonderé made important contributions, until Orfila, the Spaniard, gave the world his exhaustive and experimental work on poisons, his lectures on legal medicine, and his book on Judicial Disinterments. Orfila's work was not surpassed, or even equalled, until, in 1828 or 1830, Christison published in England his treatise, undoubtedly the best in any language.

Much has been done during the past fifty years by way of monographs, in which the special departments of this science

have been elucidated; and most notably complete works, such as the magnificent work of Casper, Taylor's Medical Jurisprudence, and in our own country Beck's great work, Wharton and Stille, Ray on the Jurisprudence of Insanity, and our last new English author, Prof. Tidy, the present professor in the London hospital.

It is a matter of commendable pride to the American, that in this country the medical profession was earliest to appreciate the necessity of teaching in medical colleges this science as a branch of a complete medical education. To Columbia college belongs the honor of the first course of lectures on Medical Jurisprudence, delivered in 1804 by Prof. James S. Stringham. In 1815 Dr. Theodoric Romeyn Beck was appointed to the same position in the Western Medical College, and Dr. Walter Channing in Harvard University, and Prof. Williams in my own *alma mater*, Berkshire Medical College. Two years after Prof. Stringham began his work in this country, Prof. Andrew Duncan, Jr., was called to a like chair in the medical department of the University of Edinburgh.

But we have time in this address only to glance at the history and literature of Medical Jurisprudence; and the purpose of the preceding paragraphs has been to show that in the race-development and the origin of society, Medicine has been the fair handmaiden, who, side by side with Law, has advanced *pari passu* in the march of human improvement.

This branch of learning has engaged the attention of the wisest and best men in the two professions which interlace to form this science—medicine and law. It has received various appellations. The term legal medicine is, to my mind, objectionable, because it suggests at once the discrimination between the illegal and legal practice of medicine, and as such is clearly a misnomer. Forensic medicine is better, for, by a little stretch of signification, it may be defined as the Medical Science of Courts, or of legal proceedings. In the use of the term State Medicine, a part is put for the whole; for State Medicine is that part of Medical Jurisprudence which relates to the laws of quarantine, the establishment of state

and local boards of health, disinfection and the spread of contagious and epidemic diseases, the reclaiming of malarial districts, the planting and removal of shade-trees, sewerage, destruction of garbage, burial of the dead, river and canal pollution, potable water-supply, ventilation of private and public buildings, and the whole varied and complex question of vital statistics. The broad, grand term, Medical Jurisprudence, covers all the ground, for it may be properly defined as a prudent foreseeing of legal rights from a medical standpoint, or the application of all the various branches of medical learning and all cognate sciences to the just determination of vexed questions at law. This opens to us the magnitude of the field of our research. We are required to know more than the authorities. The medical jurist must know men individually. He must know mankind in their physical, mental, moral, and social natures;—humanity individually and collectively;—not the cold cadaver alone, not the physiological or pathological man alone, but the living, moving, loving, hating, law-protected and law-breaking man, such as are studied and learned in part from direct contact with our species, whether above or below us in the social scale, and still farther by minute and critical study of the poets, dramatists, and novelists.

Medical Jurisprudence, although its dual nature renders it somewhat peculiar, is less distinctive than anatomy, surgery, obstetrics, or other departments of our curriculum. Medical Jurisprudence is the *vade mecum* for each and all the departments of our professional learning. It is the finishing touch, the adornment of a solid, practical medical education. The old Tuscan columns were not materially strengthened by the addition of volutes, pomegranates, and acanthus leaves; but how much more splendidly ornate are the Corinthian and Composite than the Tuscan and Doric styles of architecture. In a like manner, medical education is best adorned by becoming the interpreter of an otherwise unknown science to the understanding of legal tribunals. It is through Medical Jurisprudence that our profession forms its

grandest and most useful alliance with civil and political life. Therefore it should be carefully taught and earnestly studied. Our young men may be thoroughly versed in the healing arts of the physician; deft and cunning operative surgeons; skilled to separate the most complex preparations, and resolve them into their primitive atoms, without much knowledge of Medical Jurisprudence;—but, lacking this little, each one is in danger, on the very threshold of his professional life, of degrading the dignity of the noblest of callings, and irreparably injuring his reputation as a practitioner of medicine and surgery. It is not unfrequently the case that one of the first calls of a recent graduate is to attend the victim of a drunken brawl; or the young doctor may, with his own eyes, see mythical John Doe assault the fictitious Richard Roe, and being called to dress Roe's wounds, and in event of their fatal nature required to make an autopsy, our young physician finds himself at once in a two-fold capacity in respect to the state. As a citizen, he must tell what he saw and heard; and in this respect his testimony differs not at all from that of any other person present;—but as a medical man he will be questioned not only on fact, but he will be called to draw conclusions and give opinions which will require the most delicate perceptions, the soundest reasoning, and the most ample learning. From the police court to the coroner's inquest, from grand jury to Oyer and Terminer, he is swiftly hurried, and he there encounters men, skilled by education and practice in separating that which is competent evidence from mere testimony; and such is the nature of both civil and criminal procedure in our courts, that so far as the attorneys are concerned they expend all their skill and learning in bringing to light only such truths as shall serve their purpose and that of their clients.

This brings us to the point of demanding where and by whom Medical Jurisprudence shall be taught. First, by the preceptor. We are all persuaded by this time, that higher medical education is the great demand of the times. Not only should we see that the young men who come to us and

ask to be fitted for attending medical lectures are worthy and well qualified from a literary standpoint; but if we possess the necessary amount of human nature, or that power of mind that perceives the fitness of things, we shall be able to judge if these young men have the natural qualifications, which are not to be taught, can never be learned, but which not unfrequently make an uneducated quack succeed where a well instructed man fails. Let us never for the sake of money or policy permit a young man to study medicine who was designed by nature for the pulpit or the plough, the bar or the work-shop; but when we once find a young man whom we recognise as fitted for the work, let us as carefully instruct him in this branch of his profession as in any other. Let us be as zealous to have him present in courts when medical testimony is to be received, as to witness operations in surgery, or post-mortem examinations.

After the preceptor comes the professor, with not only his didactic lectures, but his systematized course of questions to be answered. It is a matter of surprise to me that a few of our medical schools have gone on from year to year, graduating M. D.s, whose entire tuition in Medical Jurisprudence has been so much as each professor was able to give pertaining to his chair, if it occurred to him, and that not fundamentally, but specialised and accidental. Other schools have, as it seems to us, erred in calling to this chair some distinguished legal gentleman, who will appear before his class in a patronising way, as if conferring a favor, and will assure them at the outset that it will be an impossibility in his short course of imperfectly prepared lectures to make lawyers of them, utterly failing himself to comprehend that it is not a lawyer to be made, but a medical student to be instructed in the proper manner of presenting medical learning for the information of judges and jurors. We are in doubt if any member of the legal profession, even were he a second Coke or Blackstone, is well adapted to the work of instructing medical students in this branch of education. If what Francis Wharton—one of the authors of the famous Wharton

and Stille Treatise—says be true of writing books on this science, how much more may be said of the teaching from the text-books. These are his words: "The legal writer who undertakes such a work, except in subordination to medical advice, may exhibit very satisfactorily the necessities of legal practice, but will fail to supply the information by which these necessities can be met." The lawyer is disqualified for teaching Medical Jurisprudence, because his sympathies are all against the doctors: they are his natural prey;—and the same professor will go from his medical class, and the next hour labor to make the fine gold of our most patient investigation appear as brass in the eyes of an admiring jury. The doctor, if he be worthy the name, seeks for the ultimate truth. He peers into the darkest recesses with the highest powers of the microscope to compel the most hidden secrets to reveal themselves. Not so with the attorney;—nothing true must appear that will hurt his case; and if it be necessary and possible, the doctor himself must be laughed out of court to save some rascal unhung, or to put a few hundred shekels into my lawyer's over-filled pocket.

The proper teacher is the thoroughly informed general practitioner, who, to a well grounded and liberal scholastic culture, has added at least a score of years of experience; has kept thoroughly abreast of the times, by reading and digesting the current medical, political, and social literature of the day. He must be both the hero and the victim of many medico-legal battles; must have stood the enfilading fire of opposing counsel, the masked batteries of jury-boxes, and never flinched even at the more dangerous sharp-shooting of the rifle-pit of the bench itself. If to these qualifications may be added the true faculty of instructing—"aptness to teach"—and the retentive memory that will enable him to narrate to his class his own experiences; when he can say, in the language of the son of old Anchises, "All of this I saw and part of this I was;" if, in addition to didactic lecturing, he will employ the aid of questions whose answers are in all the text-books, and will require that these answers be committed to

memory for recitation, in the same manner as a good teacher would require a student of algebra or grammar to do, and supplement this by clinical instruction in any court to which he can gain access for his class or sections of it, acquainting them with all the methods and machinery of civil and criminal trials,—such a teacher would be of signal service to the profession.

When a medical witness has learned what he should most carefully observe when in the midst of his professional duties, and becomes cognisant of circumstances liable to bring him before any tribunal as a witness, he is by no means rendered an expert. The most minute inspection of wounds inflicted before or after death, the identification of bodies, implements of murder, or felonious assault, tracks, stains, apparel, rooms, vessels, drugs, directions, situations, doors, windows, other means of ingress and egress, post-mortem examinations, ante-mortem statements, the witness's personal appearance and conduct before the inquest, inquirendo sessions, are all matters of ordinary observation, and not necessarily of expert testimony, although the doctor often finds himself both a witness of fact and of opinion. A lack of proper instruction in these matters has led to grave mistakes. I once saw a criminal, as I have no doubt, escape punishment because the careless physician who made the post-mortem examination of his victim did not remove all doubt of death from natural causes, because the skull had not been opened, and he could not swear that it was not a case of apoplexy.

On another occasion, a young gentleman of excellent medical education sent by order of the district attorney of his county to a chemist for analysis the stomach of a patient, who, having complained of great burning at the epigastrium, and having vomited blood, was a suspected case of slow arsenical poisoning. When at the trial a competent pathologist pointed out a scirrhus of the pylorus, extending through half the greater curvature of the organ, the case was taken from the jury; but the chemist was paid $200, which the young doctor could have saved to his county if he had but used even the most ordinary forensic prudence.

One of the most important duties of the medical jurist is that of coaching or preparing attorneys for defending or prosecuting causes of a medical nature. From this, which is of itself an entirely legitimate work, has arisen the infamous prostitution of medical witnesses, of which society at large and the public press justly complain, and which has often brought the blush of shame to the face of an honest lover of scientific truth.

There is a quality of mind in man, that when he beholds forces contending, he instinctively espouses the cause of one or the other, and stands ready to champion the chosen to victory or defeat. It may be only the crying of rival fishmongers, or it may be the shock of contending armies. Men are bound to have preferences, and so take sides. Two raindrops coursing down a window pane are watched with curious pleasure, to see which first makes the goal; and Charles Sprague says, even of a sick man,—

> "Let but two dogs beneath his window fight,
> He shuts his Bible to enjoy the sight."

Any question on which we are in doubt becomes plain to us if we argue sufficiently long to convince another. A gentleman, who had for many years held the office of public prosecutor, assured me that he believed all persons guilty of the crimes for which they were indicted until their innocence was proven; and this habit of thought had become so strong that he was ineffectual in defending such cases. On the other hand, a noted criminal lawyer once said to me that "The proceeding of the state against the so-called criminal population was persecution, and often the most flagrant injustice." With this strong natural bias, and with the multiplicity of authorities almost as contradictory in medicine as in religion, it is not strange that even doctors may become the dupes of the very men who have called them to aid, not in finding the truth, but so much of it as shall serve their purposes.

This condition of mind and morals has led to the oft-repeated and undignified spectacle of the pretentious, bookish, self-

conscious physician, who has walked or been driven to the court-house in company with one of the attorneys in a medical case. He is usually accompanied by a servant or student with an armful of authorities. When the case begins, he appears more interested than lawyer or client, plaintiff or defendant. If he be an imported production, so much the better, for in these States the farther you go from home for ministerial, legal, and especially medical talent, the better it is supposed to be; for, is it not written that "A prophet is not without honor save in his own country and among his own kin"? Bench, bar, jury-box, witness-stand, and auditorium, with eyes protruding and with ears erect, demand, in the language of the showman, "What is it?" Answer comes from the surrounding consciousness,—"The medical expert!" Shade of Noah Webster! what a substitution of one definition for another! It is a medical *pert*, and no expert. That this partisan should be allowed to testify is not so ridiculous as it is monstrous. He is a witness who has not only been prepared to give biased and *ex parte* testimony, but one who has actually outlined his own examination, and more than outlined it; he has dictated the very questions he desires should be asked, and has instructed the attorney "on our side," as he naturally calls it, in all the possible catches that may be overlooked on the other side. The natural supposition would be that cross-examination would pluck from him his laurels: far from it;—he thrives on the conflict. We have often seen a brilliant, positive witness of this class swear a case through against its merits by his ready memory and impudent positiveness. It matters little to him to what extent the opposing attorney may characterize his tragic performance: in the language of the period, he has gotten in his work, has spoken his piece to the jury, and, under the solemnity of an oath, and by virtue of the stupidity of the average jury, which always mistakes flippancy for learning and positiveness for truth, he has turned the scale in favor of "our side," pockets his fee, and, like Alexander, looks around for new worlds to conquer.

It should be rendered impossible for any physician or surgeon who has acted as medical counsel to an attorney in any particular case, to be called in that case as an expert. Let the medical "coacher" have his due meed of praise; allow him all possible latitude and ample remuneration,—for, in a strictly professional case, he is an absolute necessity, and his position a proud and useful one, much to be preferred to the expert's, but never to be compared for one moment with that character, who has an entirely different function to perform, and is another spoke in the great wheel of practical Medical Jurisprudence.

For the past ten years much has been said and written concerning expert testimony. The medical and medico-legal press and the magazines, even the daily newspapers, have had their tilt at expert testimony. It must be admitted that much of the adverse criticism has been merited, due to the diversity of opinions among men who were believed to be equally well informed and of equal honesty. This has been markedly the case in trials of national interest, and presents problems to the medical jurists of the world that have many of the factors of paradoxes, and which will never be adequately explained. It is true that the same subject will appear in a different light from different standpoints, but an established scientific fact is the same the world over.

In 1884 the "North American Review," one of the most conservative and high-toned of the monthly magazines, which had at that date marked the uncertain progress of American letters for sixty-nine years, published a symposium on this question, and the article begins with these sentences from the pen of Rossiter Johnson: "The assumption that an expert, when called upon to stand in the witness-box and give judge and jury the benefits of his peculiar knowledge, is entitled to more than the ordinary witness fee,—that is, to the same pay he would receive for imparting the same information to a private person, or a firm for commercial purposes,—rests, it seems to me, upon an entirely erroneous conception of his status in court. It supposes him to be there as an employé.

Instead of being there as an employé of the court, the expert should be there as a subject of taxation, and entitled to no pay at all save the usual witness fee, which, properly speaking, is not pay." There is not one line of this which shows any just discrimination between the witness of fact and the real expert; and Charles L. Dana, who is more severe on our profession, is not a whit more discriminating. He says,—"The doctor in the witness-box;—this is a phenomenon of the present century; not exactly one of the great landmarks of civilisation, but a minor sign of the times, and an evidence that science is expanding, and human affairs becoming more complex. * * * The law in this country presumes that every physician is an expert in insanity and in medical and surgical cases. It even accepts the opinions of medical students, unlicensed practitioners, nurses, and midwives. 'Everything from these sources,' say our learned judges, 'is relevant,' and they trust to the cross-examination to show its real importance. There are many reasons for believing that this practice in law is an unwise one, especially in our country. The medical profession in America, from whom experts are thus drawn, is a body of extremely mixed character, and is, as a whole, much more irresponsible, ignorant, and untrained than that of any other of the great nations. The country is full of small medical colleges, where men and boys of the most deficient education, after practically about two years of study, are graduated and licensed. The States, as a rule, require no evidence of character, or special fitness, in those who are to undertake the care of human lives, or are to be summoned officially as the advisors of justice. Medical Jurisprudence is scarcely taught at all, and the chances are, if any doctor is called to the witness-stand, that he brings with him not only the prejudices of a defective education, but great ignorance of legal procedure." Because there may be truth in these quotations, they by no means settle the position of the medical expert. So far as he may be a witness to fact he is entitled to no remuneration. It is the duty of all good citizens to defend the majesty of the law, and

support in all purity the demands of justice; but when the ample-minded, the thoroughly versed, medical man comes into court, ignorant entirely, it may be, of the merits of the particular case on trial, and, after hearing patiently for days the testimony *pro* and *con*, he comes to stand, like the sworn interpreter, between the court and the witnesses, defining to the former the value, from a medical standpoint, of all the statements of the latter, giving opinions based on reading, hearing, and experience, he is entitled to the most courteous treatment and liberal reward.

It was our own Ordroneaux who first declared the medical expert to be *amicus curiæ*, the friend of the court. Rossiter Johnson would make him *servus curiæ*, slave of the court. He is in truth *adjutor curiæ*, the helper of the court, as, without fear or favor, he stands for medical truth,—"the whole truth and nothing but the truth." He is the embodiment of the glorious motto of this association, "Defend the Faith." Permit me once more to quote from Dr. Ordroneaux. Defending the expert, he says,—"He is no ordinary witness. He has no concern with the issue. It is nothing to him which side wins or loses. Although personally present at the trial, he is only impersonally related to it. His heart is not so much to be consulted as his brain in delivering his opinions. In fact, he has no business to have any feeling in the matter at issue, or to enter into the merits of the controversy. Like a faithful microscope, he should simply enlarge the field of the vision of others, and bring out the concealed proportions of objects which, in turn, and like a mirror, he should content himself with reflecting."

The true medical expert, when he is divorced forever from the medical advocate or attorney, will be auxiliary to both parties in litigation; and it should be the proudest moment in any professional man's life, when, his name being announced by one side of the case, the other shall say with fervor, "Dr. Blank is entirely satisfactory to us." Let the medical expert stand between the contending factions, not to judge the law,—his honor on the bench is there to do that;

not the merits of the evidence,—that is the province of the jury; but to prudently foresee that all parties have their legal rights from such medical standpoints as he is able to occupy. What matters it to such a man if some rival brother whispers a smart question in an attorney's ear? He is ready for prosecution or defence. The dreadful hypothetical question has no horror for him. The expert recognises in these questions that which the side presenting them hopes has been proven by the testimony, and he answers them as hypotheses, and as such only. Like the judge's charge to the jury, the testimony of the true expert will seem to favor the side which has the best case according to the law and testimony; but, as all cases have some good points on both sides, the testimony of the conscientious expert will follow truth, if it leads the prisoner out to sweet liberty of complete acquittal, or down through the dark, damp felon cell to the ignominious gallows. The true expert will not suffer a half truth to appear; for such a suppression is misleading, and, in the light of impartiality, of the nature of false-witnessing. When a question is propounded which obliges him to give an answer that, like a prism, colors the white light of perfect truth, he will answer without hesitation; and then, with the dignity which belongs to a helper of the court, he will ask to explain and strip the mist of seeming falsehood from his last answer, and the truth will shine all the brighter for the momentary obscuring.

If expert testimony has been the object of ridicule, it is not the fault of Medical Jurisprudence. It is because the teaching, learning, and practice of Medical Jurisprudence have been either neglected or misunderstood. When a proper distinction is made between a medical witness of fact, a medical "coacher" or attorney, and the true medical expert, we shall find arising among us and recognised by the courts of justice everywhere a class of men learned, judicious, temperate, and honest, who will pursue the truth with the same zeal and courage in civil and criminal tribunals that has characterized their unselfish nobility and humanity in morgue, pest-house, and hospital.

DISLOCATIONS OF THE ANKLE.

By Chas. W. Brown, M. D., of Chemung County.

November 17, 1886.

Dislocations of the ankle are important on account of the danger they involve to life, and the difficulty we find in reducing them and retaining the bones in their natural position after they have been so placed; and as, under the most favorable circumstances, and with the best results obtainable, there is in a large majority of cases more or less permanent impairment of locomotion. Therefore it is fortunate that this is among the most infrequent of the severer traumatic lesions, the mechanism of the articulation being eminently unfavorable to this occurrence. The length and width of the malleoli render lateral displacement of the astragalus almost impossible without concomitant fracture of one or both of these projections, while dislocation in the anterior direction is nearly as impracticable, in consequence of the extraordinary strength and firmness of the ligaments connecting that bone with the tibia and fibula.

Writers vary in their description of this injury. Sir Astley Cooper, Malgaigne, Hamilton, and others prefer to term it dislocation of the lower end of the tibia, while Boyer with a majority of French and English surgeons, also Gross and many other American surgeons, speak of this dislocation as of other bones, and call the distal bone the one dislocated. I shall follow the example of the latter, and speak of dislocations of the ankle as meaning the separation of the astragalus, carrying with it the foot from the bones of the leg, so that dislocation of the astragalus inward will be the same as Hamilton's dislocation outward, and forward the same as his backward.

These injuries seldom occur without fracture of one or both malleoli. The foot may be displaced forward, backward,

inward, outward, or upward, between the tibia and fibula. Dislocation outward, with fracture of the external malleolus, is the most common, while dislocation upward between the tibia and fibula is seldom met with.

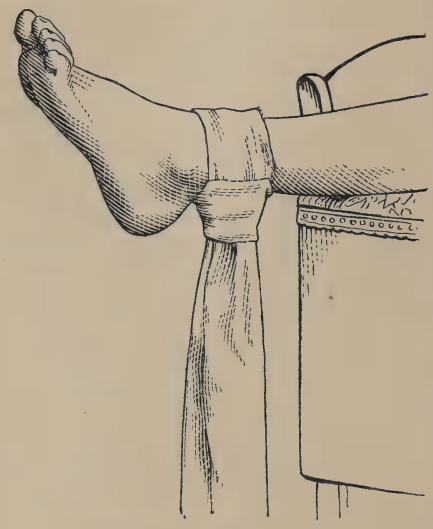
To ascertain as nearly as possible the relative frequency of the different forms of dislocation of the ankle, and the results with the varied plans of treatment, I sent a request to one hundred and fifty physicians and surgeons, mostly Fellows of this Association, asking them to forward a tabular statement of cases occurring in their practice. I received replies by letter from seventy, and in person from fourteen, making in all eighty-four. Of these, twenty-five reported one or more cases that had come under their observation, and the remaining fifty-nine had met with no cases in their practice, the whole number reported being ninety-seven cases. The direction of the dislocation was in thirty-five cases outward, in thirty inward, thirteen forward, six backward, and five upward between the tibia and fibula. The direction was not stated in eight cases. More than two thirds of the whole number, or sixty-nine, were complicated with fracture. Fracture of the fibula in twenty-two cases, fracture of tibia eleven, five being of internal malleolus, fracture of both tibia and fibula eight, and fracture of the astragalus two. Of the remaining thirty-six the seat of the fracture was not stated. Twenty-six were compound. Death was the result of the injury in five cases, all of which were compound dislocations. Amputation was performed in six, which were compound, and all recovered. In fifty-one cases the result was an useful ankle, there being partial ankylosis in about half of them, the balance ranging from a weakened or slightly deformed ankle to a complete recovery. The astragalus was removed entire in one case, and one half of this bone removed in another.

Hamilton, in his work on dislocations and fractures, says,— "A large majority of these cases which have been called inward and outward dislocations of the tibia were merely examples of lateral rotation of the astragalus within the half ginglymoid and half orbicular socket formed by the lower extremities of

the tibia and fibula," and that true dislocations, either partial or complete, are at this joint and in these directions of very rare occurrence. I shall continue, however, in accordance with the general practice of writers, to call them all dislocations, whether the astragalus simply rotates on its axis, or is displaced laterally and horizontally from the tibia.

The following cases which came under my care and treatment I will give somewhat in detail, the first one being the most rarely met with of any of this class of injuries:

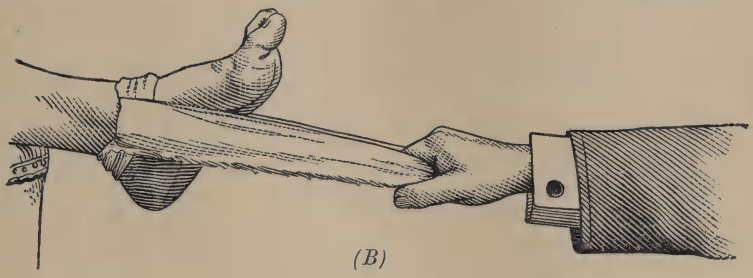
March 16, 1885. Jared Farnum, aged 43, a large, healthy, muscular man, was putting some sleighs overhead in a shed, when the floor gave way and he jumped down ten feet to prevent the sleighs from falling upon him. He struck on his right foot, producing an upward dislocation of the astragalus and fracture of the fibula. The astragalus was forced upward between the two bones of the leg, the fibula being fractured two inches above the joint, and widely separated from the tibia. The inner malleolus was also fractured. The astragalus preserved its natural direction, but was impacted so firmly that its reduction was a matter of considerable difficulty. The two malleolar projections were extremely prominent, and descended nearly as low as the sole of the foot, which was slightly twisted and inclined to the inner side. An attempt at reduction was made without etherising the patient, and after several trials it was found that the astragalus could not be stirred from its new position.



(*A*)

Drs. Dundas and Weaver were called in to assist. The patient was placed on his back on a solid couch; ether was administered, and a strip of Canton flannel, three yards long and four inches wide, torn lengthwise, was folded so that it was about two inches wide; this was doubled and the two ends passed around the leg and put through the loop, as shown in cut (*A*), then around the sole of the foot and under the part passing around the

ankle at the inner malleolus, then the ends drawn through far enough to pass beyond the centre, as shown in cut (*B*). Two strong men took hold of this so that traction was made equal on both sides of the foot. The thigh was flexed on the body, the leg on the thigh, and held in this position by two persons, while a third made traction at the heel, rotating at the same time, forcing the heel forward while the leg was held firmly fixed. Persistent traction being made by the straps, the astragalus was finally forced into its natural position. The leg and foot were placed in an easy position in a fracture box after they had been covered from the toes to the middle of the leg by a close fitting bandage. The ankle was kept thoroughly wet with



(*B*)

cold water and aqueous extract of hamamelis. The swelling was considerable, and lasted for several weeks before he was able to leave his bed. After six weeks he walked with crutches, and gradually improved, until he is now able to walk without the aid of crutch or cane. The ankle is half an inch broader than the well one; there is considerable motion in the joint; the foot is somewhat everted, but it is useful, and gives him no pain unless he steps on the side of his foot.

The mode of applying traction in this case is simple, and can be easily applied. I have never before seen it done in this way, nor have I seen it described by any author; so I conclude it may be new: hence my reason for describing it so fully. It can be well applied to the wrist, thumb, or fingers.

Case II. J. C., a teamster, aged 48 years, intemperate habits, former history of syphilis. While he was assisting in unloading an iron girder weighing over a ton, the horses started, and the iron fell across his ankle, turning the foot sidewise, producing a compound dislocation of the ankle inward, and fracture of the fibula four inches above the ankle. The tibia protruded three inches and extended below the foot. It was decided that amputation was the only thing that offered a chance for recovery. As he

had been told by two physicians before my arrival that amputation was not necessary, and that his foot could be saved, he would not submit to the amputation, and insisted that a trial should be made to save his foot, even though his chances for recovery were almost hopeless. After all attempts by my council and myself to persuade the patient and his family to allow his leg to be amputated had failed, we gave stimulants freely, then etherised him and enlarged the opening through which the tibia protruded, and by traction and manipulation returned the tibia to its natural position, the astragalus being easily put in place. The wound through the soft parts was closed by sutures, except a small place at the lower angle for drainage. A compress and close-fitting roller bandage were applied. Dupuytren's splint was used to hold the foot in position. The ankle was kept thoroughly wet with carbolised water; opiates were given to control pain, and 15 drops tr. ferri. chl. with 2 grains quiniæ sulph. ordered to be given every six hours.

On the evening of the 28th his temperature was 101°, and on the 29th 102°, and it did not go above that until on the 31st, the fifth day after the injury, when he complained of being chilly, and the temperature went up rapidly until evening, when it registered 105.5°. Up to this time there was but slight discharge from the joint, and but little swelling. On the morning of Nov. 1st I found he had suffered severe pain in his abdomen all night. There was no tenderness over the abdomen nor tympanites. Morphia was used in large doses, but failed to relieve the pain entirely. The foot and leg were greatly swollen and red, to the middle of the thigh. The temperature was still 105.5°. As he had not passed any urine since the day before, a soft rubber catheter was introduced into the bladder, and a small quantity of urine mixed with pus was drawn off; the pus clogged the catheter so that it was necessary to wash out the bladder with warm water containing extract of hamamelis. This was repeated every day, and large quantities of pus washed out each time until three days before his death, when it was discovered that the urine was all passing down through the pelvis and out of an opening on the sacrum. On the morning of the 2d he was delirious and could not sleep. The iron was given every four hours, and the leg painted over with the same, then wrapped in cloths wet in a solution of acetate of lead. On the 10th day the discharge from the ankle became profuse, and all the integument covering the outer side of the joint sloughed off. The swelling and redness decreased, the temperature fell to 100°, and he ceased to be delirious. Abscesses formed along the tibia, and discharged very large quantities of watery pus. The erysipelatous inflammation involved the gluteal region and extended over the whole back to the shoulders. The soft parts sloughed until his ribs and vertebræ were laid bare, and nearly all the integument and muscles sloughed off from his leg and the back of the thigh to the pelvis. Before his death, which occurred on Nov. 30th, his foot nearly dropped off when it was dressed.

The following are some of the answers to my circular letter:

Dr. J. G. Porteous reports three cases, all with fracture of the fibula. One treated in fracture-box, one in plaster bandages, and one in leather side-splints. Result good in all, except weak ankle for some months.

Dr. F. W. Brown. Three cases, two outward and one upward between the tibia and fibula. Two were complicated with fracture, and were treated with splints applied to the side of the leg, one moulded from sole leather, the other made of wood and padded. One case was a very fleshy woman, weighing about 225 lbs. "I could do nothing but pack the leg in a box. All recovered with nearly or quite perfect use of joints."

Dr. Wm. Woodward. S. M., Dec. 25th, 1852. Dislocation inward, with fracture of tibia; both bones pushed off from the astragalus. Treatment, flexed position of the thigh and leg; result nearly perfect.

Dr. Charles L. Squire. Six cases.

Case I, J. D. S. Training a colt, which ran away, throwing him out on the hard, frosty ground. The injury received was dislocation of the ankle, and fracture of the internal malleolus and supposed fracture of fibula in its lower third. Under treatment some time. He now walks as well as he ever did.

Case II, A. C., a carpenter. Fell from the wall at the State Reformatory. Suffered a fracture of the forearm and dislocation of one of his ankles; the same forearm had been broken once before, and the same ankle had been once before dislocated. At the time of my visit it was difficult to keep the joint in shape, but no fracture could be detected of the tibia or fibula. Recovered so he could walk with a cane.

Case III, C. L., painter. Slid off a roof on a ladder, and struck the ground with one foot on the round of the ladder and the other on the ground. The injury was a dislocation of the ankle with fracture of the articulating end of the tibia. Was very difficult to treat. The joint has only limited motion, and shows some deformity; considerable limp at the present time when he walks.

Case IV, W. F., stone-cutter. In a scuffle in a bar-room he was struck on his extended foot by a chair thrown at him by a companion, producing a dislocation of the ankle with fracture of the fibula. The dislocation was to the fibula side. Patient was early treated, and had full use of his ankle joint in six weeks' time.

Case V, W. M., driver. His horses ran away, throwing him to the ground. He sustained simple lateral dislocation of the ankle, which I early reduced, and treated with fine result.

Case VI, F. J. C., truckman. Dislocated his ankle by turning his foot inward on an inclined sidewalk while unloading a heavy stove from his dray.

This was a plain case of simple dislocation, and easily reduced by extension. Made a good recovery.

Dr. W. H. Davis. Two cases. Dislocation outward, both compound; one complicated with fracture of tibia and fibula near the joint; caught under a heavy rolling log; result, useful limb and foot. The other case was complicated with fracture of both bones near the joint; several splinters removed from tibia at first dressing, with extreme injury to soft tissues. Under observation twelve days; result not known. Was run over by caisson in the army.

Dr. E. S. F. Arnold. I reported once a case of compound external dislocation of the ankle with fracture of the tibia; compound comminuted fracture and denudation of fibula, all the external ligaments being torn through, thus admitting of dislocation as well as the fracture. The case is reported in the "American Medical Times." The case terminated in recovery, with only slightly stiffened joint.

Dr. R. B. Smith. Three cases. One forward with fracture of fibula; lateral splints and fracture-box; result good. Two compound; removed lower end of tibia; lateral splints and fracture-box. One died of pyæmia on the 8th day, and one recovered with very useful foot.

Dr. C. V. Elliott. One outward, with fracture of fibula about three inches from the lower extremity. Reduced fracture and dislocation, and applied heavy pasteboard splints. Result good, except that there is not quite as free motion in the joint as before.

Dr. Ely VanDeWarker. One outward, compound, in a man aged 70 years. Treated with splint at first, afterward with plaster of paris bandage adjusted so as to remove. Extensive suppuration through joint. Death one year after by exhaustion.

Dr. F. O. Donohue. Has had five cases of dislocation of ankle with fracture of fibula within the past ten years. They were all cases of persons past middle life, and in every case there is some impairment of the joint, and in one case in particular there is eversion of foot. These were all dislocations of tibia inward with rupture of internal lateral ligament, with foot turned outward. They were all treated with Dupuytren's splint, with one exception: this case was that of an old man at 70. "I treated him with side splints with foot pieces: the result was no better than the others. I have had none of the other dislocations mentioned in your circular."

Dr. Wm. Detmold. "I have seen several cases with fracture of fibula: do not recollect any without fracture. In an old case of dislocation of astragalus forward, where the head of the astragalus had gradually pierced the skin, made excision of astragalus. Patient doing well. About six weeks after, there being slight erosion of the articular end of tibia, some ignorant surgeon amputated the leg."

Dr. J. H. Chittenden. One case forward, compound. He says,—"My case should be viewed rather in the light of fracture of tibia and fibula with

displacement of astragalus, than as dislocation. The displacement was very marked and never fully restored, all reasonable efforts to the contrary. Much deformity resulted through the perversity of patient. Case was in my hands for two or three years, then left the city for a time; finally returned to consult me. Found her with caries of the bones of the foot. Advised amputation, which I learned was never done. She finally died of blood poisoning, aged about 55 years."

Dr. Robert Newman. "I had one case of dislocation of the ankle in an infant at the Dispensary about nine years ago. It was of the tibia inward, with probable fracture of the malleolus, and considerable bruises. The dislocation was reduced, foot bandaged, and several days after put in plaster of paris splints. This is from memory, no notes taken. About four months afterward the patient had apparently a good recovery, with little callus enlargement at malleolus. Another case I have seen three months after the accident: Male about 35 years; dislocation of both bones. Result bad, ankle stiff, enlarged from callus; patient lame."

Dr. H. D. Didama. "I had a case of compound fracture and dislocation of the ankle some years ago. A woman was thrown from her carriage. The astragalus was fractured through its middle. One half was removed, and the other half, which was still firmly attached by its ligaments, was left, very improperly as I know now, but did not know thirty years ago. The progress was slow, but the cure with an ankylosed joint was complete although the parts remained painful for a very long time. Removal of the other half of the fractured bone would probably have left a better condition of things."

Dr. H. O. Jewett. Reports twelve cases, two forward, six inward, and four outward, and says,—"Have generally reduced them by moderate but persistent extension aided by pressure with the hands. One case, as I recollect, required great force. Have dressed with leg semiflexed, with or without double inclined plane and well adjusted side splints of carved wood, gutta-percha, or pasteboard, same as for fracture of lower third of tibia. Have had considerable trouble with some, but have obtained satisfactory results, I believe, in all. Have had a number of cases of oblique fracture of lower end of tibia, compound, with lateral displacement, fracture involving articulating surface, and have had at first considerable trouble in keeping bones coaptated. Cure, of course, protracted and tedious, but finally successful. I have treated but one case of forward dislocation of the ankle; the other one enumerated came to me for advice twelve months after receipt of injury; the end of tibia rested and still rests upon the instep, no effort being made to reduce it. Yet locomotion is performed better than could be expected. In dressing with pasteboard splints I make them upon the limb with strips of tough pliable paper and paste; after they are dry, cut them open before and behind; then by trimming and binding, and slight moistening, they adapt themselves very nicely. These splints are very light, and

can be used a number of times, being easily fitted to new cases. All my cases of complete dislocation of the ankle have been attended with fracture of internal malleolus, or of the fibula a little above the joint, or with both. I have treated two cases of oblique fracture of lower end of tibia extending through the articulating surface in which the lower fragment seemed to tilt over, making it very difficult to reduce and keep in place the bones; yet with perseverance and much attention better results were obtained than were at first expected. I have never encountered a case in my own practice where the astragalus was carried with the bones of the leg in the luxation, nor have I met with any in which the tarsal bones were displaced except by crushing weight upon the instep. In the treatment of compound cases of either fracture or luxation I have used antiseptics freely, and, I may say, have had far better results than my early teaching led me to expect. None of my own cases have been so bad as to require amputation."

Dr. Jonathan Kneeland. "One with fracture of fibula three inches above. Broken end of fibula protruded two inches; reduced by slitting the hole larger. Extension made by fastening foot to an upright piece connected with a cradle splint, extending from arm-pit, and keeping the knee flexed. We got an imperfect cure, a swollen and nearly stiff ankle."

Dr. Elias Lester. "One forward, compound. At first I used lateral splints, but could not keep it in place. The fibula was broken and the parts lacerated so that my splints and dressings hurt, and it would work out of place for the first two or three days. I then put it on an inclined plane, with very slight dressings and some extension, and had a very good recovery: some impairment of the joint's action, but he walks well. This occurred sixteen years ago. I see the man quite often, and he is well satisfied. This injury was from a direct blow or crush from a floor covered with grain falling on him. Since writing you I have had a case of dislocation of tibia at the ankle joint with fracture of fibula, the lower end of the tibia protruding through the integument three inches, rupturing all the ligaments to the joint. The case was a young man aged 24 years, good health, of nervous temperament. Horse ran away and threw him over an embankment into the river. After getting him home I gave ether and reduced the dislocation, and dressed it on an inclined plane as I did the former one. The next day I found that the bone would not stay in place, and changed it to a straight position on a board with pulley and weights, which kept it in place perfectly, and was easy and comfortable. He did well till the 6th day, when tetanus set in, and he died on the 8th day. If I had the thing to do over again, I should amputate. There was too much destruction of the joint to expect a good recovery, and I think it would be better treatment to cut off the leg at its lower third. I am of the opinion that dressing the limb straight is the proper treatment when the dislocation is not complicated, and I should hereafter resort to that method. The cases I have reported to you were not common subluxations, which, when replaced, would stay there without any

trouble. I have had a great many of these in which the mode of treatment is of little consequence, as they have no disposition to move after they are once replaced. But those two I have written you about would slip to one side if left to themselves, and some means had to be used to keep them in place."

Dr. J. Davison reports two cases of compound dislocation, and says,— "In my late case the astragalus was removed. Kept on side splint opposite the wound; there was no fracture. The man now walks well; keeps a cigar store. He also at the same injury lost his left arm. The other case recovered, but turns his toes out excessively, and has to use a cane."

TABLE.

	No. cases.	Inward.	Outward.	Forward.	Backward.	Upward bet. T & F	Dir. not stated.	Compound.	Comp. by fracture.	Result.	Amputated.	Died.
1. Ely Van Dewarker...	1	...	...	—	1	...	...	1	...	...	...	1
2. Florence O. Donohue.	5	...	5	...	...	...	...	...	5	u	...	...
3. Elias Lester.....	2	...	1	1	...	...	...	2	2	u	...	1
4. Wm. Detmold.....	1	...	...	...	...	...	...	...	1	...	1	...
5. J. H. Chittenden.....	1	...	...	1	...	...	...	1	1	...	...	1
6. George Earll.....	1	...	...	...	1	...	...	...	1	...	...	...
7. E. D. Ferguson.....	1	...	...	...	1	...	...	...	1	u	...	...
8. Robert Newman.....	1	...	1	...	...	...	...	...	1	u	...	...
9. H. D. Didama.....	1	...	...	...	...	...	1	1	1	a	...	...
10. H. O. Jewett.....	12	6	5	2	...	...	...	5	12	u	...	...
11. Jonathan Kneeland...	1	...	1	...	...	...	...	...	1	a	...	...
12. Chas. W. Brown.....	2	...	1	...	...	1	...	...	2	u	...	1
13. C. V. Elliott.....	1	...	1	...	...	...	...	...	1	u	...	...
14. R. B. Smith.....	3	1	...	...	...	...	2	2	...	u	...	1
15. Frederick Hyde.....	41	19	10	6	3	3	...	9	22	u	5	...
16. E. G. Drake.....	3	...	...	3	...	...	...	1	3	...	...	...
17. Jas. Davison.....	2	...	2	...	...	...	...	...	2	u	...	...
18. E. S. F. Arnold.....	1	...	1	...	...	...	...	1	1	u	...	...
19. W. H. Davis.....	2	...	2	...	...	...	...	2	2	u	...	...
20. Chas. L. Squire.....	6	...	1	...	...	...	5	...	3	u	...	...
21. Wm. Woodward.....	1	...	1	...	...	...	...	...	1	...	...	...
22. D. W. Brown.....	1	1	...	...	...	...	...	1	1	u	...	...
23. Geo. W. Cook.....	1	...	1	...	...	...	...	...	1	u	...	...
24. Fred W. Brown.....	3	...	2	...	...	1	...	...	1	u	...	...
25. J. G. Porteous.....	3	3	...	...	...	...	...	...	3	u	...	...
	97	30	35	13	6	5	8	26	69	...	6	5

a. Ankylosis. *u.* Useful.

Dr. William Fitch says,—"I think the most interesting case of dislocation of the ankle I ever had was in December, 1858; E. M., aged 24 years.

It was four hours after the accident that I reached the house. Upon examination I found complete dislocation of the ankle outward, with the plantar surface looking toward his face. Standing behind or on either side of my patient gave me a full view of the plantar surface. The internal malleolus was fractured, and the fibula three inches above the joint; at the same time the external cuneiform bone was forced upon the dorsum of the foot. Before reduction there was no swelling of the foot or ankle. With an assistant at the knee to produce counter extension, I grasped the heel with one hand and dorsum pedis with the other, and with extension, rotation, abduction, and coaptation, I completed the reduction. I then seized the cuneiform bone and replaced it. The swelling was rapid and enormous. I never saw the like; it resembled the inflation of a bladder. I placed the limb on a double inclined plane. He made a good recovery. I have uniformly placed the leg in the above position in injuries of the leg and ankle with good results. The injury in the above case was produced by his being thrown from a fallen tree across a ravine to the ground twenty-five feet below, his foot striking on a round stone."

DISCUSSION.

The President, Dr. E. M. Moore, remarked that while he had little to say concerning the simple form of the displacement, his experience in compound luxations of the ankle resulting from severe injuries had long ago convinced him that the teachings of the books were erroneous; that they were too broad. The strain necessarily caused by attempts to retain the foot in compound dislocations involved conditions demanding the nicest care and the best judgment; but to save the foot was the great prize in view, and it should be taken into consideration that any one would be willing to run some risk for the attainment of this result. It was not merely a question of statistics between amputation of the lower part of the leg and conservative surgery, but of the risk that every one would undertake and submit to. He thought that in dealing with men at an early period of life, living in the country, not in cities, free from syphilitic complications, and where the injury has merely thrown the foot out of its place without destroying the artery—where the posterior and anterior tibial arteries can be felt—the advocacy in the books of amputation as the best resource was misleading and outrageous, for if there were a possibility of saving the foot it should not be submitted to the rule of statistics.

Of five cases under his observation, one was a railroad accident, where the foot was driven out into the open air, both bones, the internal malleolus and fibula, broken and more or less comminuted—precisely one of the cases where, according to the books, amputation should be performed. He resected the astragalus, took out some of the pieces of broken fibula, and placed the limb in the box. The object was to get rid of some of the tension caused by replacement of the astragalus. If the bones be brought back in their

natural position, the swelling is an element of danger; free drainage and relief of pressure are required. This case was protracted, but the man now walks upon his foot, and with motion in the ankle, for the result was to produce a flail-joint. The next case was a boy 12 years of age; and a boy may be torn half to pieces and live through it if the blood-vessels are not torn. In another case reduction had been effected by a surgeon who had replaced the astragalus and stitched up the wound, but, on referring to his books and finding that they all advised amputation, returned for the purpose of amputating. Dr. Moore was sent for, and finding the patient a healthy man, 30 years old, dissented from the operation, and prescribed removal of the stitches, the introduction of drainage-tubes, immersion in warm water, and irrigation in every possible way. As a result, the foot was preserved with a stiff ankle. In a fourth case the termination was less fortunate. With the idea that resection of the ankle would afford the best method to obtain a flail-joint (the correctness of which he now doubted), he performed this operation; the extremity was placed in warm water, and some bandages were applied for the purpose of keeping the parts on a splint. The physician in care, finding the bandage tight, instead of cutting it freely off cut it at the edge, which did not give relief. Strangulation occurred, gangrene began, and Dr. Moore amputated the leg. The man lived. After an experience of this sort, and seeing the survival of all the patients, he was convinced that the books were wrong, and had remonstrated against their teachings. But on looking back to Sir Astley Cooper's practice he found that this surgeon was in the habit of resecting the lower ends of the tibia and fibula in these cases, and keeping the foot in place.

The best result that the speaker had ever seen occurred in a case of compound dislocation with fracture of the fibula and internal malleolus, in his own neighborhood, under the care of a young surgeon, whose practice, he thought, should be followed. The fractured end of the bone in such cases is attached to the foot by the ligament; if the foot be bent over with force, the power of the ligament is sufficient to cause fracture, as it is a great deal stronger than the bone, and therefore the latter is held down with the foot. In the case referred to, the surgeon resected the end of the tibia and left the malleoli both in place, and these were brought up and united to the bone at the point of resection. There was just space enough between the astragalus and resected tibia to avoid intense strain, and the operation produced a flail-joint, the patient being now able to walk with free movement and absence of deformity. Dr. Moore had accepted this as the best method of treatment, reserving always the question whether the foot be likely to live after severe injury.

Dr. Frederick Hyde, of Cortland county, wished to rank himself on the side of conservatism as regarded the sacrifice of the lower extremity in cases like those under consideration. The difficulty which most severely taxed the surgeon's skill in such cases was not in the lesion itself, but in the attend-

ing complications. It was therefore almost impossible to adopt an arbitrary rule of treatment. He was quite certain that in his earlier practice he had sacrificed some ankles by following the rule of the books, which he had not done for the last twenty years, having found that each case must be weighed by itself. Unless the circumstances were incompatible with delay, he would hold over. Complications affecting the circulation constitute an important element in the prognosis. If the circulation be cut off, the question is settled, but it may be only partially so, one or two arterial branches being injured, and yet collateral circulation carried on sufficiently to preserve vitality below. In an instance occurring in his practice within the past year, a healthy middle-aged man fell from a building, producing a compound dislocation and fracture at the ankle joint. The foot was entirely out of line with the leg; the anterior tibial artery had been torn off, but the posterior tibial was intact; there was a transverse fracture of the tibia an inch and a half above the articulation. Dr. Hyde deliberated whether to sacrifice the limb, but considering the age and previous good health of the patient, and the fact that circulation was still carried on in the parts beyond the lesion, resolved to replace the parts intact as well as possible, laying aside all forms of artificial dressing, and watching the case closely before proceeding to operative measures. The first two weeks gave rise to much anxiety and some misgivings, for surgical fever set in, and during three or four days and nights the propriety of the treatment seemed in doubt. Finally, however, the fever abated, nervous symptoms subsided, and the patient made a remarkable recovery, with complete reparation of hard and soft parts, and is now able to walk with scarcely a limp, and with fair mobility of the ankle joint.

The speaker's own experience had convinced him that the best results were to be obtained by following up each case as the occasion requires, irrespective of this or that particular form of dressing, doing for each what it needs to-day, and to-morrow making what modifications may be necessary, and so giving time and care to afford the patient the best opportunity to recover. Amputation may be sometimes necessary, but he was not in a hurry to amputate, as he formerly was. He would not wait when he saw mortification extending; but it should be remembered that in these contused conditions of the soft parts there might be a superficial dying of tissue not material to the welfare of the body of the patient.

Dr. U. C. Lynde, of Erie county. It falls to the lot of surgeons to meet with a good many cases of injury to the ankle joint. They are generally simple, and consist of fracture of one or both malleoli. Dr. Moore has said that the bones will yield before the ligaments do. As Hamilton has stated, these are not dislocations of the ankle upon the tibia. The malleoli give way, the foot turns to one side or the other; they are not dislocations. Perhaps I have seen of these fractures thirty or forty cases. I have seen a good many, and all that is required is to move the foot back: the artic-

ular surface of the tibia is not completely displaced from the astragalus. One most excellent remark made by the President was, that he cut the stitches from a certain case of compound dislocation of the ankle joint. In all these severe injuries every surgeon should understand that they should never be sewed up. The skin is just large enough in a healthy condition of the parts to cover them; but when the soft parts have become contused the resulting swelling will be so great as to destroy them.

I have seen one case which I am well satisfied was an exception to the rule stated by Dr. Moore, that the bone would give way before the ligaments. The tibia projected forward one third or one half an inch; neither malleolus was broken. The foot was swollen greatly when I saw it three or four days after the injury. At the end of two weeks I discovered that I had to do with a dislocation of the foot backward.

I was called to see a case of compound dislocation in which the anterior tibial artery was cut off. In this case I was associated with Dr. Briggs, health physician of Buffalo, and tried to prevail upon the patient, a healthy young man, to submit to amputation. He would not, so we treated it with irrigation and no bandages nor splints. We lost our patient. That is the only case I have ever lost out of perhaps half a dozen cases I have had of compound dislocation of the ankle joint.

The severity of these cases depends, of course, mainly upon two things: First, Is it compound? Second, Is it a direct injury? has the circulation been cut off from one or both arteries? I should regard a case where both arteries have been cut off as entirely hopeless.

Dr. Chapman, of Orleans county, referring to the case mentioned by Dr. Moore, in which a young surgeon had resected the end of the tibia, asked if the operation was necessitated for the reduction of the bone, or to get rid of the articulating surface.

Dr. Moore replied that the case was one of compound dislocation, where the bones were entirely separated, the end of the tibia protruding. This was removed, but the lower portions of the fibula and tibia were attached to the foot and were not removed. The limb was shortened about one half or three quarters of an inch. This, by taking off the strain, facilitated a free discharge of the pus which must inevitably form, and the space between the ends of the bone gave opportunity for the formation of cicatricial tissue, resulting in a flail-joint.

COMMERCIAL PRESCRIPTIONS.

By H. C. Van Zandt, M. D., of Schenectady County.

November 17, 1886.

At the meeting of the Association last year, I made a feeble effort to enter a wedge which I hoped would eventually separate from the profession the parasite of proprietary prescriptions, which had fastened itself deep into, and was fast sucking from it, its individuality, accuracy, and intellectuality, leaving it simply the routine work of writing for somebody's ready-made preparation. Having at that time entered the wedge of considering the inexpediency and ethical bearings of the subject, and having, as subsequent events have shown, made a breach, I propose now to hit the wedge another tap by considering the effect of such prescribing upon the physician, the patient, and the community.

It is self-evident, that, generally speaking, the clearer insight we can get into the patient's symptoms, the nearer we can approach to a knowledge of the exact pathological conditions, and the better we can read the indications for treatment. It is this habit or faculty of exactness which constitutes in large measure the difference in medical practitioners. Medical knowledge is not anything if it is not accurate; and it is the ever varying conditions and complications, the unending diversity of premises, which render the conclusions in medical problems so liable to error.

There are few axioms in medical science. It is experimental, the *vis naturæ* ever being an important unknown factor. The repetition of a prescription for the same abnormal conditions at different times or for different persons is always unreliable. Some of the many conditions or surroundings may be different; and if we fail to note this difference, we fail in accuracy of prescription and correspondingly in results. It

is just as much obligatory upon us to be accurate in prescribing as it is to be so in diagnosing. Ever so keen a diagnosis followed by a loose or careless prescription is simply a waste of effort on the part of the physician and a fraud upon the patient.

The prescription of a ready-made or proprietary medicine is always a loose prescription, for we cannot be assured of the composition of these preparations even when the formulæ are known. I have found by actual experience that some "were not what they seemed." The mere fact that the maker holds a proprietary right is *prima facie* evidence that he is not a regular physician; and it is notably true that very few are physicians at all, but persons who for greed of gain and business purposes are endeavoring to gull the profession into being accessory to their fortune-hunting.

The physician who habitually prescribes ready-made or proprietary compounds, having surrendered the right to think for himself, is the prey of all the solemn medicine-peddlers in the country. He is simply the cat's-paw for the manufacturer, doing his experimentation to the benefit of the maker, but to his own detriment; he is doing that which, while it may enrich the manufacturer, will make the physician poor indeed; he is doing that which is neither reasonable nor professional, and which, as a mere business transaction even, is a losing investment. The effect of such prescribing is to make the physician careless, inaccurate, and unreliable; for he allows the manufacturer to furnish him his therapeutic knowledge, and the "drummer" to do his prescribing. His cures are the exceptions, and his practice degenerates into the merest routine, which is first cousin to downright quackery.

The copyright and the trade-mark have no place in the pharmacopœia of the regular conscientious physician, and the sooner they are banished from our minds, shelves, and prescription-books, the sooner we shall come to more solid truths, more accurate prescriptions from whose actions something may be learned, and to more healthy results both to ourselves and to our patients.

The effects of such prescribing upon the patient may be various; certainly, as far as curative effects are concerned, there is reason to believe that they are generally far below what an accurate extemporaneous prescription would have produced. If these ready-made remedies really contain what they profess to contain, and in the stated proportion (which is a subject of very great doubt), wherein are they any better than an extempore prescription containing the same ingredients? If the patient receive any benefit, he ascribes his cure to the credit of the manufacturers; and if he does not receive any help, he blames the physician, who, as he says, only gave him So-and-So's medicine, which he could have obtained without consulting him: and this is the mental comment, if not the open expression, to the belittling of the physician who prescribes thus. The effects of such prescribing upon the community are simply the aggregate of those upon patients, serving to encourage self-prescribing and quack remedies by endorsing these ready-made and bottled remedies, disappointing and humiliating to the profession, and driving the community to the varied schisms, or even ranker forms of quackery.

This great horde of proprietary and ready-made preparations seems to me an unmitigated nuisance; and I think it is high time that we stand upon what little dignity we have still left, and assure these laymen and self-styled chemists that they might as well cease sending us their leather-covered, gilt-edged, trade-mark-stamped little books, filled with preposterous stories and statements of how people have done wonders with their preparations; cease to proffer us their self-interested, original therapeutic advice; cease to send out their drummers with their samples and their little stories; cease to tell us what to do, and leave us the time previously spent upon them for sensible therapeutic study. Some of these manufacturers have within the last year called in their drummers, probably because it did not pay (as I have occasion to know that quite a number of physicians have refused to waste their time with them), but send out in their stead

dictated letters, very modestly informing us that they appreciate how valuable our time is, and therefore will not any longer trouble us with men and samples; but, after all, that their preparations of so-and-so are the best in the world, and will do wonders, if we could only be induced to try them. In fact, these zealous merchants leave no stone unturned which they think will tend to bring the influence of the professional endorsement to the support of their wares.

It is a sorry day for a learned and honored profession when, through its carelessness or indifference, it promotes a condition of things by which the greed of the times can use the influence of that profession at will. This is a matter which threatens soon to become one of self-preservation unless we arouse ourselves to the extent of this encroachment. Let us no longer, as a profession, lower ourselves so that these laymen and chemists, if such they be, can mount upon our backs and be borne into notice; but let us straighten ourselves up to the full stature of men, and throw off this incubus. If we are physicians, let us be honest with ourselves and our patients, and do our own prescribing,—stand upon our own platform, and if it will not hold us, fall through out of sight, as we deserve, rather than attempt to prop up a scanty therapeutic knowledge with the theories of the self-styled chemists or the pharmacal knowledge of the plausible drummer, thereby making the profession a stepping-stone to a horde of men who care nothing for it except so far as they can obtain its influence to satisfy their greed and further their business enterprises.

I am in earnest about this matter, for I regard it as a thorn in our side, a clog upon the wheels of our progress, a parasite which has fastened itself deeply upon us; and unless some action of ours shall cast it off, there is no telling where the growing tendency of this evil will end. These preparations are, after all, only the outspoken patent medicines drawn down a little to hide the cloven foot; and soon after receiving the approval of the profession, they pass through their probation, and, blooming out in their true colors, are

thrown on the open market. By encouraging such things we not only transgress our code obligations, but we injure ourselves and our vocation; we perpetrate a fraud upon our patients only to enrich those who have no interest in our profession, but seek only to make capital out of its gullibility.

A MODIFICATION OF POLITZER'S AIR-BAG.

By H. E. Mitchell, M. D., of Rensselaer County.

November 17, 1886.

The importance and advantages of forcing air through the Eustachian tubes, in many varieties of ear disease, are too well known and understood to need more than a passing reference in connection with my subject.

The two methods of inflating the middle ear in general use are known respectively as Valsalva's and Politzer's, the essential difference between them being that the former is performed without any instrument, while for the latter an apparatus is necessary.

It is admitted by most aurists of the present day that the Valsalvian method has very little to recommend it,—some even considering that, by causing a more or less permanent congestion of the parts, it is not wholly devoid of injury to the ear.

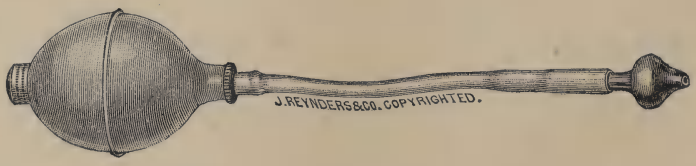
Politzer's method, on the other hand, accomplishes all, and more, than can be done by self-inflation, without any of the attendant congestion; but inasmuch as the requisite apparatus is comparatively expensive, and necessitates a considerable degree of skill on the physician's part to operate it easily and deftly, and more or less practice on the part of the patient to enable him to use it successfully himself, it has become routine practice with many otherwise careful and competent practitioners to direct their patients "to close the nose and mouth, and force the air into their ears by blowing as hard as they can."

The Politzer air-bag, as found at the instrument-maker's, consists of a soft rubber bulb, so large as completely to fill the hand when it is grasped, and requiring an appreciable quantity of time to force the air from it. Now, as the air, if it is to reach the tympanic cavity, must not be allowed to escape

downward into the fauces, and as the faucial opening can only be closed for a fractional part of a second during the act of deglutition, it is evident that the length of time necessary to compress the air-bag becomes an important factor in the effective use of this instrument.

The price of the Politzer air-bags, as quoted by the leading dealers, varies from two to three dollars, the cheaper kinds not being effective, and the more expensive ones soon becoming useless from wear. A physician may therefore often hesitate to insist that his patient shall provide himself with so costly an apparatus; and the patient himself, upon finding that nearly the same result can be produced by self-inflation, may decline to be put to what he may regard as a needless expense.

The modification of this instrument, to which I invite your attention, involves no new principle; but the diminution of the size of the bulb enables us to force the air from it much more quickly, and reduces the expense to the minimum; and the valve, acting automatically, needs no attention on the operator's part. The claims for its consideration, therefore, are cheapness, convenience, effectiveness. The one which I now offer for your inspection can be furnished at retail for seventy-five cents.



INTESTINAL OBSTRUCTIONS, WITH REPORTS OF CASES.

By B. L. Hovey, M. D., of Monroe County.

November 17, 1886.

When an impediment to the passage of the contents of the bowel along the intestinal canal exists, the condition is known as intestinal obstruction. It is said, "The causes of this occurrence are numerous, the symptoms urgent, the diagnosis difficult, the treatment uncertain, and the termination, unless relieved by nature or art, speedily fatal." With this statement of fact, there is no class of cases to which the practitioner is called, more important, or which demands on his part greater skill and judgment.

The causes of intestinal obstruction are,—1, intussusception; 2, congenital malformation; 3, volvulus or twisting; 4, internal hernia; 5, strictures,—malignant, cicatricial, or simple; 6, pressure of tumors; 7, impaction of fæces, or foreign bodies; 8, intestinal paralysis. These are the most common; yet authors name others, and divide the causes into two classes, acute and chronic.

1st. Intussusception, or invagination, is one of the most frequent causes of intestinal obstruction, and, as the term implies, it is the protrusion of one bowel into another. In this condition, usually the lower end of the ileum becomes invaginated in the portion immediately below it. If the invagination proceeds, the condition goes on at the expense of the lower intestine until the protruded bowel becomes inflamed, and terminates in mortification. If the patient lives long enough, this portion is passed away in "shreds or fragments" until the whole invaginated bowel is expelled by the anus. In favorable cases the blood-vessels of the healthy bowel above and below pour out coagulable lymph, and when this is organ-

ised, the breach is closed, and the intestinal tube is made complete or whole again. To have this favorable result, it will be observed that there must be perfect coaptation of the two ends of the bowel; otherwise an opening into the abdominal cavity will result, allowing the contents of the intestines to pass into it, ending in fatal peritonitis. Other terminations of this condition are mentioned by writers, such as spontaneous reduction and recovery. This is unusual, but we are assured that cases of this kind have terminated in health, after a positive diagnosis of the case was known by the tumor in the abdomen and by the invaginated portion being felt in the anus.

I have already stated that the invagination usually occurs in the small intestines; yet we find that authors report that any portion of the alimentary canal may become obstructed, but all agree that the greater percentage is found in the small bowels. Intussusception is found in both sexes and at all ages,—more common, however, in males than in females.

Symptoms of intussusception generally come on suddenly, and indicate obstruction and inflammation; severe colic pain located in that part of the bowel which is obstructed, severe and paroxysmal at first, but subsequently assuming more of a continuous character. Vomiting is an early symptom, and is generally persistent. After two or three days fæcal matter is ejected. If the large bowel is involved, there is tenesmus, and bloody slime passes away. Above the obstruction gas accumulates, and the abdomen becomes distended. In spare persons the invaginated portion can be felt through the abdominal wall. This is only a very brief statement of the pathology and symptoms of intussusception, which will be more fully explained in the two following cases:

Case I. Mr. M., aged 45 years, a laborer, stout, florid complexion, healthy in appearance and quite corpulent. On August 25th he was suddenly attacked with colic pains across the bowels over the umbilicus. I saw him three hours after the attack. The pain was severe, lasting only a few moments, then relaxing into an interval of ease; returning with an increased severity, and each returning spasm more acute and lasting longer than the preceding one. The case was supposed at first to be one of colic, and was

treated as such by hypodermic injections of morphia, water enemata, and hot fomentations. At the end of twelve hours the condition of the patient was no better, although he had two grains of morphia hypodermically and the enemata repeated frequently. At this time the pain was more constant, with slight tympanites; no fever or acceleration of pulse. The treatment was continued, with the addition of kneading the abdomen, and massage. A change of the position of the body was frequently made. The hips were elevated, and kneading done when in this position. It gave no pain, for there was no tenderness. The enemata ran away without any fæcal matter after the first. Thirty-six hours passed without relief. The patient had taken no nourishment. It was thought advisable to give rectal alimentation, which was done by injecting one pint of lamb broth. It was retained only a short time; the morphia hypodermically repeated often. After forty-eight hours, the symptoms were much increased in severity, and the case appeared to be rapidly approaching a fatal termination. The tympanites above the stricture was very severe; eructation of gas almost continual, and finally stercoraceous vomiting, with a cold, clammy sweat, indicated that the powers of endurance were rapidly giving way. At this juncture another effort was made to relieve the patient by position and rectal injections. He was placed upon an ordinary couch, his hips resting on the elevated end, with legs held up by an assistant to that degree that the patient was supported on his shoulders erect. An ordinary flexible tube twenty-four inches long was passed its full length into the bowels. By use of Davidson's syringe, one quart of lamb broth was first injected, and the tube removed; no desire to stool, nor disturbance by gas; after thirty minutes the tube was reintroduced, and two quarts of saline water were injected as before, and the patient laid down; no movement, but an increase of eructations and vomiting; pulse accelerated; no severe tenderness; no tympanites below the stricture. After one hour the patient was placed in the former position, the tube passed in its full length, and one gallon of saline water was carefully and slowly injected. The tube was held in position a few minutes with the thumb over the end, to prevent the water from escaping. While this was being done, a great commotion was going on inside, evidenced by noise distinctly heard by all in the room, and a sharp pain described by the patient. On removing the tube, it was followed by a gush of wind, water, and the contents of the bowels. The position of the patient was not particularly pleasant for this part of the performance, but nevertheless it answered his purpose; for he called out, "I am relieved."

Case II. A woman, 56 years of age, spare in form, intellectual, usually regular in habits, and living an easy life. I will not take your time to relate the history of this case in detail, but simply say that the symptoms were substantially as in Case I, though less severe, and did not come to a termination until the fifth day. The treatment of the case was substantially as the preceding one.

I have only two reasons to present in support of the plan of treatment adopted by me in these cases. I am aware that water and other fluids have been advised by authors to relieve this difficulty. Hamilton says that large injection of air has been advised since the days of Hippocrates; and water, he says, is objectionable, "on account of its weight." It seems to me that the weight of water is the one great factor in the relief of this malady. It is understood that the upper portion of the intestine passes into the part below. The distending power of water upon the gut enlarges it in all directions, and at the same time diminishes the protruding portion, and by its weight reduces the intestine to its normal position. May it not be compared to taxis in the reduction of ordinary hernia? Position is another important consideration. It will readily be perceived that if the force is applied to the protruding part, the weight is the only power to act directly on the abnormal situation of the bowel; therefore the patient should be placed in the position which will best secure this result. In the case described, the position was on the shoulders, with elevated hips. Dr. Illoway, of Cincinnati, in the "American Journal of Medical Sciences," January, 1886, and Dr. Baylis, in the "American Journal of Obstetrics," November, 1886, speak highly of a force-pump of recent invention in the treatment of intestinal obstructions. I have no knowledge of the instrument aside from these reports.

Congenital malformations, as a cause of obstruction, are confined almost wholly to the rectum and anus, and properly come under the province of the surgeon. Yet no doubt many before me have more than once in their practice relieved the new-born infant by passing a trocar to relieve an imperforate anus.

Volvulus, or twisting, is named as a cause of intestinal obstruction. This condition is known to produce fatal strangulation, but our means of diagnosis are so imperfect during life that surgical or medical treatment is of no avail.

Internal hernia is named as a cause of obstruction. The differential diagnosis as given by Erichson is, in brief, a sud-

denness of onset of the symptoms; great prostration, or syncope; severe and fixed pain, and vomiting; the absence of the enlarged tumor which is found in intussusception; and from volvulus, by the unequal distension of the abdomen.

The diagnosis of the cause of obstruction, especially internal hernia, is of great importance, as far as the treatment is concerned. If the obstruction is from internal hernia, which is to be determined as accurately as possible by the history of the case and by a careful exploration of the abdomen and rectum, then the relief is more certain and safe through surgical interference than when arising from other causes.

The author above quoted says that opium and calomel, with enemata and warm fomentations, are proper remedial means to determine the cause of the obstruction. These agents will aid in determining whether the difficulty is spasmodic in character, or inflammatory. The presence or absence of fever is another important diagnostic symptom as to the origin of the disease. If the cause is ascertained with tolerable accuracy and is found to be hernia, the difficulty is relieved by laparotomy. Belladonna has been urged by Dr. Brinton as a therapeutic agent, and success has been reported by its use. Opium is a safer remedy, and answers the purpose of keeping the bowels quiet until nature or artificial means give relief.

Abdominal surgery to-day is common, and the reports of its success are certainly gratifying. It is the final means used; and if a large percentage die, it may perhaps in part be attributed to the delay in operating.

Impacted fæces and foreign bodies are common causes of obstruction. Dr. Flint, in his Practice of Medicine, says that obstructions from these causes usually take place in the large intestines. The rectum in aged persons not infrequently is the seat of such accumulations, when the obstruction is due to fæcal matter. The diagnosis is easily determined by rectal examination, and the relief readily applied in the form of water enemata. This difficulty, however, is not confined to the aged, for I have attended children with fæcal accumula-

tions to such an extent as to produce absolute obstruction. In some cases the mass has been so hard that water would not soften it, and the relief was obtained by the use of a scoop and local means.

Many persons (more particularly females) eat indigestible substances, such as chalk, soft stones, charcoal, tea and coffee grounds, and the like, causing not only obstructions, but other ailments, which sooner or later destroy health and life, if the habit is persisted in.

I once attended a young woman who habitually swallowed pins. It was not unusual for her (so I was informed) to have from ten to thirty pins in her mouth at a time. The swallowing of them at first was accidental, but subsequently she would purposely pass them into her stomach. The act seems insane, but this habit was the only evidence of mental disease. The habit grew upon her, and remonstrance had no beneficial effect until she became alarmingly sick with acute peritonitis. Rectal examination with an anal speculum revealed the cause of the obstruction, which was the common pins lodged in the rectum. I removed, with forceps and such other means as were at my command, two hundred and forty-seven pins, which lay in all directions in the lower bowel. So long as the pins passed through the canal no special harm was experienced by the patient; but when the first one became lodged, that made a dam or check to others, and soon, with fæcal accumulation and consequent inflammation, the passage was obstructed. The remedy in such cases is obvious.

Again: I attended a miss, fourteen years of age, who was suddenly taken sick with severe colic pain in the umbilical region, quick and rapid pulse, high fever, red cheeks, and white around the mouth, nausea, and some vomiting, with fulness of the bowels and constipation. The diagnosis at first was gastric disturbance and perhaps worms. A laxative of castor oil was administered, followed in the usual time with an enema of warm water. The water passed away, with no relief. The symptoms continued, and grew more severe until the third day, at which time the abdomen was tympan-

itic, and apprehensions were entertained of a fatal termination. At this time a rectal examination was made, and to my surprise, by the use of a teaspoon handle, I removed one pint of cherry pits, which had been swallowed the three days preceding her sickness. No history of the case, either by the mother or the patient, pointed in the least to the cause of the symptoms. Then, again, the enemata on the first day passed away with only a small quantity of fæcal matter. This would naturally direct the mind to other causes. It may properly be asked why the water injections did not remove the foreign substance from the rectum on the first day of the sickness. The answer is that it was not there. The castor oil and other laxatives, and the large amount of fluids taken as drinks, forced the pits down through the intestinal canal until they reached the point where the sphincter ani muscle and other natural causes retained them, where such substances usually produce obstructions. In removing the cause, the patient made a rapid recovery.

These and other similar cases are familiar to every practitioner of medicine. The lesson to be drawn from them is, to learn the history as far as possible of every case. In this case the treatment proved to be proper, but perhaps in the next one, where the cause was entirely different, it would not only be hurtful, but fatal. We have all seen the bad effects of cathartics in intestinal obstruction. Authority and experience agree, that whatever increases peristaltic action increases the danger of the patient.

Paralysis of the bowels is the last cause of intestinal obstruction that I shall notice in this paper, and in doing this I shall confine myself to the report of a single case that recently was under my care:

Mr. M., aged 52 years, small in stature, fairly developed muscles (for a small man), fair complexion, blue eyes, usually in good health, regular in habits, temperate, mentally bright and social, cheerful with his family, a regular attendant of his church, and industrious (being a carpenter and joiner by trade). He has an anterior dorsal curvature of the spine, but no impairment of the organs by reason of it is discovered. On August 10th, being sick with diarrhœa, he took by mistake an overdose of tinct. opii.; the quantity not known, but estimated as one half an ounce. It was six to eight

hours after taking the drug before his condition was known. At that time he was thoroughly narcotised. The ordinary means were used by two competent physicians. Twelve hours after the accident was discovered, I saw the patient in consultation. At that time the narcotism was complete; the pulse about 20; respirations intermitting, and only six to eight per minute; he was entirely unconscious. With other means employed was electricity. This agent had been used at intervals for several hours before I saw him, and was continued afterward. It had the effect of producing a spasmodic action of the muscles wherever applied. He at this time was walked about the room by the assistance of two stout men, and for several hours not allowed to lie down. He gradually became conscious, and recovered to that degree that he resumed his labor in five or six days. In about ten days after this it was noticed by his boss and fellow-workmen that he appeared strange. He was silly, talked to himself, would laugh at nothing, stop work, pick up blocks of wood and play with them, and laugh heartily. In his family his conduct and actions were similar; his speech became slow and hesitating; his answers to questions were generally correct, though dragging. He ate usually well. The family were unable to state as to the regularity of his evacuations at this time. He soon became restless and wakeful; wandered about the room at night; speech more hesitating; and he finally lost the power of talking entirely. He became melancholic; grew weak, and went to bed Sept. 16, thirty-six days after taking the opium, and for five weeks was not out of bed, except as assisted by his family and nurse. His urine passed in bed unconsciously. At this time he had no power apparently to move, except his arms; his pulse was normal; appetite fairly good, as he would take whatever was handed him; his food was milk or broths; no solid food of any kind. From the 16th of September to the 19th of October, not a particle of fæcal matter passed him. His abdomen was not greatly distended. No vomiting until the fifth week; then he vomited several times a day for four or five days. During this time he was taking the following prescription: Liq. strychniæ, Fowler's solution, two drachms each; aloes ext. fl., one ounce; syrup. sennæ, two drachms; in two drachm doses every six hours. Here I will say that the usual remedies had previously been used to procure evacuations. When the vomiting began he commenced to improve; his speech returned as it left him four weeks before, and this was the first symptom of convalescence. Just five weeks from the time he went to bed, he passed unconsciously in bed a very large stool, which was about the color and tenacity of putty, and the size of a pipe-stem. From that day he gradually improved, and is now well and regular in his habits, and mentally sound.

I have been purposely minute in the clinical history of this uncommon case, that the Fellows of this Association might be able to form in their own minds its pathology and ætiol-

ogy. It will be observed that previous to his taking the overdose of opium, on Aug. 10, he was a healthy man, and that he recovered from the effects of it to that degree that he was able to resume his labor; that the first perceptible symptom of disease was mental weakness; that this grew upon him until he was semi-demented; that the first physical symptom was defect in speech; that this increased until he was unable to pronounce a word; and with this his bowels and bladder became palsied, and remained so for five weeks. The cause of this disease is no doubt due either to some lesion of the brain or spinal cord, or both, or to functional disorder. I am not prepared to adopt the idea that there was a nerve lesion as the primary or exciting cause. The progress of the disease was too slow. The evidences of functional disturbance can with more propriety be maintained. It is very common to see patients in all conditions of life, and of all ages, suffering from gastric dyspepsia. It is also common to diagnose acute and chronic intestinal indigestion. The former is more readily determined, for in the stomach there is only one active secretion; in the latter there are three, all participants in the act of solution. The differential diagnosis, on which I need not now dwell, is well marked. The constitutional effects of the two, and their modes of producing diseases, are almost innumerable. The general practitioner daily treats diseases which have their origin in gastric and intestinal indigestion. Not to name the multiplicity of diseases originating from these sources, or to attempt to give their pathology, it may, in general terms, be stated that every function of the body is impaired, and often the reasoning faculties are dethroned.

In conclusion, then, the long and continued narcotism produced a morbid nerve force, which, directly or indirectly, impaired the organs of secretion, whose functions supply the stomach and intestines with solvents in aid of proper digestion.

Paralyses, both general and local, are diseases followed by indigestion; and other neurotic affections, such as epileptiform convulsions, hyperæsthesia, and anæsthesia, are traced to undigested food in the intestines.

A NASO-PHARYNGEAL TUMOR OF LARGE SIZE. REMARKS UPON THE PATHOLOGY OF THESE GROWTHS AND THEIR REMOVAL AFTER PRELIMINARY RESECTION OF THE SUPERIOR MAXILLA.

By Nathan Jacobson, M. D., of Onondaga County.

November 17, 1886.

Aaron Parkes, living in Sullivan, Madison Co., N. Y., æt. 17, was referred to me Jan. 27, 1886, by Dr. H. D. Didama, of Syracuse. A note from the doctor said that I should find a large growth possibly involving the superior maxilla, but certainly distending the soft palate; and concluded with the statement, "If you can snare it out you will do enormously well."

The young man was one of nine children, the others being healthy. His father was insane. No tumor is ever known to have existed in the family. He was deathly pale, and greatly reduced in strength. The loud, labored breathing kept up through the constantly opened mouth was very distressing. Hearing was impaired, speech was unintelligible. The face wore an almost idiotic expression. The accompanying photograph (Plate 1) gives some idea of his appearance.

For three years he had suffered with what his family thought was catarrh. No physician had been consulted until within a few weeks. For eight months the trouble had grown rapidly worse. The right cheek was prominent; the right eye crowded upward; the right nostril filled with a grayish mass that reached forward into the vestibule. The septum was crowded over, and occluded the left nasal fossa. Upon opening the mouth, the soft palate was seen pushed forward. Raising the uvula with a palate-hook, a large reddish-gray tumor came into sight. Palpation discovered a firm but elastic growth, filling the naso-pharynx to its utmost, crowding into the nares, firmly adherent to the pharyngeal vault and the neighboring bony structures. Upon the face another mass about the size of a hen's egg could be felt under the malar bone, sufficiently movable to be pressed back toward the zygomatic fossa. A wire loop with difficulty was passed through the right naris into the pharynx, and could be made to encircle but a small portion of the tumor.

With a Jarvis's snare a part of the nasal prolongation was removed and submitted to microscopical examination. Such an abundance of small, round bodies were crowded in between the stellate myxomatous cells that the growth was pronounced a myxo-sarcoma. Repeated trials not only con-

PL. 1.

PL. 2.

firmed the early impression of Dr. Didama that to snare it out one would do enormously well, but soon convinced us that nothing short of a capital operation offered any chance of its thorough removal. The fearful extent and broad attachments of the growth, its probably malignant character, and the extremely precarious condition of the patient, caused us to hesitate in deciding upon the proper course to pursue. The late Dr. R. W. Pease held out but the faintest hope even of the successful termination of a serious operation. However, its removal by means of preliminary resection of the superior maxilla was finally determined upon.

The operation was performed at St. Joseph's hospital, Syracuse, on the 20th of February, 1886. I was assisted by Drs. Didama, Pease, Totman, Owen, and Magee. There were present also Drs. Stevens, Post, and Watkins, and several medical students. The patient was tracheotomised. An enlarged thyroid gland obliged us to operate lower than we desired. Ether was poorly taken, because of the difficulty in respiration. After placing the tube, chloroform was substituted, and anæsthesia continued through the tracheal orifice. The throat was tamponed with a sponge. Fergusson's incision was now made from just below the inner angle of the orbit, along the side of the nose around the ala to the columna, and down through the middle of the lip. A second incision was carried horizontally across the face to the malar bone, from the upper extremity of the first. The flap thus outlined was dissected back with but little hæmorrhage. The right lateral incisor was drawn. The alveolar process was cut through with Liston's forceps. Then, with one blade in the naris and the other in the mouth, the palatal process was partially severed, and in turn the malar and nasal processes of the superior maxilla. With a fine saw the bone was separated from malar to nasal process, just above the antrum, and the palatal process was farther sawn to the soft palate. A blunt, narrow-bladed bistoury separated the hard from the soft palate horizontally. The jaw, seized with a Fergusson's lion-jawed forceps, was depressed and broken from its palatal attachments. The bleeding was still moderate.

The tumor reached, the zygomatic portion was first attacked. It adhered to the external surfaces of the pterygoid process, and was found to be continuous with the pharyngeal tumor. To separate the whole growth from its attachments and raise it out of its bed entire was, because of its size, found impossible. To gain room, it was decided to divide it with a Paquelin thermo-cautery, two of which were kept constantly ready in case of need. Either because of the intensity of the heat or the vascularity of the tumor, we encountered most profuse bleeding, which, after a while, the cautery partially controlled. Freeing it from its adhesions, it was found attached to the floor of the orbit, the septum, and the pterygoid plates of the sphenoid; sent prolongations into both nasal fossæ, the antrum, and all adjoining cavities. The adhesions were firm, and were torn away or severed with the thermo-cautery. When free from all other attachments, it was finally

found to spring from the body of the sphenoid and basilar process of the occipital, exhibiting a decided pedicle. The growth was seized with a vulsellum. A needle armed with a double ligature was carried through the pedicle, close to the bone, and fastened with Tait's Staffordshire knot. Dr. Didama drew the ligature as tightly as he could. Under this pressure the pedicle shrank, so that after the third tightening it was reduced to a mere cord, although at first its diameter in either direction was considerably more than an inch.

Some bleeding points were cauterised with the thermo-cautery. No arteries required ligation. From the time the tumor was attacked, the bleeding kept an assistant busy sponging. At one time during the operation the patient was pulseless. Brandy was freely administered hypodermically. At the suggestion of Dr. Pease the space was fairly well packed with styptic cotton. The flap was replaced, the ligature brought out, and both silk and silver sutures applied. The time occupied with etherization and operation was an hour and a half. He was put to bed with hot water bags to his feet and hot bottles to his extremities. Brandy and beef-juice were given per rectum, and one third of a grain of morphia administered hypodermically. Every hour, milk, beef-juice, or brandy was given. At 10 P. M. he was conscious, and conversed. He had been restless, and had vomited some blood. The following morning he rallied. The pulse was 120 and the temperature 99°. Some pain in the stomach was relieved by hot fomentations and an opium and belladonna suppository. The latter produced urinary retention. For the first sixty hours after operation his head ached so badly that he could not raise it. The temperature did not reach 100°, and the pulse varied from 90 to 100. The wound was sprayed every two hours with a solution of potass. permanganate, one grain to the ounce. The tongue was constantly dry. A great amount of thick, viscid mucus came away, but no styptic cotton. At one time the tube became displaced.

On the fourth day there was a slight hæmorrhage, not to exceed two ounces, which ceased spontaneously. The temperature rose from 98.8° to 101°; the pulse became bounding in character; the odor of the breath was very penetrating; headache grew more intense; the right cheek became swollen and the line of union somewhat œdematous. The silver sutures were all loosened. I worked for an hour faithfully, and thought that I had removed all of the cotton. The next day the temperature did not vary much from 101°; the odor remained. I removed the superficial sutures. The wound looked gangrenous.

The wire sutures were removed on the fifth and sixth days; the line of union was perfect. From the fourth to the ninth day the temperature was about 100° in the morning and 101° in the evening. Sloughs from the cauterised surfaces were discharged. A small piece of necrosed bone, broken off from the inner pterygoid plate, was removed; occasionally there were slight hæmorrhages.

On the ninth day I removed the ligatures. The tongue was dry and brown anteriorly, and covered with a thick coat posteriorly. The temperature seemed disposed to rise. The cheek in the region of the malar bone exhibited some swelling. During the next twenty-four hours it became greatly augmented, and fluctuation was evident. The wound had an unhealthy look. He had a slight chill, and the temperature rose to 102.5°. I opened the abscess in the cheek through the mouth, and considerable pus discharged. The following morning the temperature was almost normal, but another chill in the afternoon was followed by a rise to 102°.

On the thirteenth day I removed the tracheotomy tube. For the four succeeding days the fever gradually left, until on the seventeenth it had disappeared. Granulations were coming in nicely. The pharyngeal vault presented a less healthy appearance than did the other parts. Each day the throat and nose were frequently and freely cleansed and disinfected. Attempts to find cotton were fruitless. Quinine and tr. ferri chlorid. were being given. A more generous diet was allowed. The swelling of the cheek had produced a separation in the horizontal line of union.

On the evening of the seventeenth day I discovered and removed a mass of cotton, but failed to find more. With this date began another rise in temperature. From normal on the seventeenth it rose to 103.8° on the evening of the 19th. The following morning it had fallen only to 102.2°. The pulse was irritable and 110. I succeeded again in removing a quantity of black, foul smelling cotton. During the afternoon he complained of being chilly. At 4 P. M. he had a decided chill. The temperature rose until it reached 105° at 5:30 P. M. The night was more comfortable than had been anticipated. In the morning the thermometer registered 99.8°. The strong odor hung about him still. After this high fever he was particularly exhausted. For the succeeding eight days there was a morning remission to about 99°, and an evening rise to 101° or 102°. Quinine and iron were being constantly taken,—the former in varying doses, at times large in anticipation of an exacerbation, and again only tonic doses. But, however administered, the fever remained unabated.

March 14th I succeeded in removing still more cotton under rhinoscopic inspection—the method always employed. At the time of removal the temperature was 100°; six hours later it had risen to 102.8°. The next day the patient appeared more deaf than usual, and his left ear pained him. Hot applications externally gave slight relief. For several days the pain gathered force; at times he would be almost frantic. Hot water syringed into the ear, cocaine dropped into the ear and sprayed into the pharynx, the internal administration of opiates, only slightly mitigated its severity. On the 18th, the pain in the left ear decreased, only to be supplanted by severer pain in the right, and, in fact, over the whole top of the head.

Accompanying these manifestations was a rise in temperature to 103.8°. Although somewhat stupid, perhaps from the codeia he had been taking, he

remained rational. No evidence of abscess formation could be found; but on the following day, accompanying a reduction in temperature to 99.8°, there was a profuse discharge of pus from the naso-pharynx. This was our last high temperature, but it was April 17, *i. e.*, eight weeks after the operation, before we were fever free. Granulations came in; the mucous membrane spread over them. One third of the space between the cheek and middle of the mouth was thus filled up. At one point, a space one half inch square, the membrane was very tardy in closing over, and in fact did not do so until the first of August.

April 27, 1886, he was discharged from the hospital. Each day, however, at home, throat and nose were directed to be thoroughly cleansed with a carbolised solution. His health slowly improved. He gained sufficient strength before summer to do ordinary farm work.

When seen October 8, he appeared as photographed (Plate 2). His face had lost its former stupid appearance; the hearing was good; speech somewhat impaired, though better than before operation; respiration took place noiselessly through the nose. The only scar upon his face is just beneath the eye, and resulted from the separation of the tissues referred to. The cicatrix is adherent to the bone, and hence the lower eyelid is drawn down. In the roof of the mouth there is quite an opening, somewhat contracted, of course, corresponding to the removed palate processes of the superior maxilla and palate bones. The soft palate is, of course, intact; it hangs a little lower than normal. There is no indication of a recurrent growth. No effort to place an obturator has as yet been made.

The weight of the tumor was nearly four ounces. The following is a report of its pathological character, by Dr. F. W. Sears, of Syracuse: "In the anterior portion, the basic or intercellular substance is mainly soft and homogeneous. In some parts, delicate, wavy, fibrous connective tissue is seen, in which are large numbers of branched myxomatous and numerous small round cells,—the latter being especially prevalent in the vicinity of the blood-vessels. Sections here, as in all parts, exhibit a rich supply of blood-vessels, the coats of which are ill-defined, owing to the infiltration of small, round cells. In the pharyngeal portion the intercellular substance is coarser, more dense and fibrous, and contains also a larger number of cells, some branched, but more round. As there is an exceedingly large number of small round cells in the normal, and especially in hypertrophied, tissues of these parts, I believe this growth to be a fibro-myxoma, containing a large number of mucous cells and migrating blood-cells, the cell infiltration of the blood-vessels being due to their rapid and imperfect structure formation."

REMARKS.

Panas is quoted by Morrell Mackenzie as having called attention to the fact that different portions of these tumors present varying pathological characters.

Satterthwaite pronounced a section taken from the nose of a case, prior to operation by G. A. Peters, to be a small-celled sarcoma. After its complete removal he determined that it was a fibroma.

It is obviously impossible to decide upon the nature of an entire tumor from the examination of a nasal prolongation. The existence of a profusion of small round cells does not necessarily imply a sarcomatous condition. Virchow has called attention to the similarity between mucous corpuscles and the small round cells of sarcoma. He bases his classification of these growths upon the greater or less abundance of the fluid or cellular elements—the muciparous serum of the Germans. The greater the amount of gelatinous substance in the cellular inter-spaces, the more reason is there to say, myxoma.

Especially in the nose, where there is such a rich supply of mucus, must we look for this saturation with mucous corpuscles. As far as I can learn, no one pretends to be able to distinguish by their appearance indifferent fœtal cells, as Ackerman calls them, from the post-fœtal white blood-corpuscles, mucous globules, or the small round sarcoma cells.

Of great importance is this fact in reaching a diagnosis and prognosis; ofttimes it may seriously influence the treatment. However, it must not be forgotten that Dupuytren considered the fibrous the most certainly and speedily fatal of all nasal tumors.

The methods suggested for the removal of naso-pharyngeal tumors have been thoroughly studied and discussed. It is obviously unfair to compare the various operative procedures. A growth with a distinct pedicle, free from prolongations into the various cavities, in a patient fairly well preserved, surely would not warrant the same treatment as is required where

the tumor is broadly attached, reaches well into every possible fossa, and the patient is evidently in a desperate condition.

Dr. Rufus P. Lincoln presented a very able paper to the American Laryngological Association in 1883, together with a table embracing the leading features of seventy-four cases. His results with the galvano-cautery loop are especially brilliant. But in a large class of cases, like the one forming the basis of this paper, its use cannot be entertained. In some of the smaller tumors preliminary resection of the nose or palate has been practised. In discussing the subject of preliminary resection of the superior maxilla, these cases will not be considered.

Briefly stated, the history of preliminary resection of the superior maxilla for naso-pharyngeal tumor in Europe begins with Syme in 1832. His patient died very suddenly and unexpectedly on the third day after operation. He supposed that he was about to remove a tumor of the antrum. The true nature of the growth was not discovered until the jaw had been resected. Flaubert, of Rouen, in 1839, was the first to knowingly undertake the resection of the superior maxilla as preliminary to removing a naso-pharyngeal polyp. His patient lived.

We are told by Otto Weber, in Billroth and Pitta's Surgery, that prior to the time of Heyfelder (who in 1844 was the first to resect both maxillæ) these operations had been viewed with great anxiety. But the easy manner in which they were borne led men to sacrifice the jaw too commonly. This blow was aimed at Maisonneuve, Michon, and other French surgeons. Great stress is laid by him upon the efforts of Langenbeck to restrict these trespasses by substituting temporary displacement of the jaw (osteo-plastic resection), an operation first suggested by Huguier. The saw, and particularly the chain saw, is used by the Germans. In England the cutting forceps is given preference. Weber has not seen good results in his practice or observation. In his cases, the entrance of putrid secretions into the bronchi has sometimes

caused fatal broncho-pneumonia. Other patients have died from perforation of the skull produced in the efforts to remove large tumors, and from erysipelas and pyæmia.

Langenbeck is credited with twenty resections, ten of which proved fatal. When he introduced his operation for temporary resection, he thought that these tumors sprang from the spheno-maxillary and neighboring fossæ, and that prolongations were sent from here into the pharynx. This view was shared by contemporaneous surgeons, as is evident in reading the review of C. Hueter in the *Jahresbericht* of Virchow and Hirsch for 1868. At this time Sir William Fergusson also mistook prolongations into the zygomatic and other fossæ for independent growths.

Morell Mackenzie, in his work on Diseases of the Nose and Throat, says that "Mott of New York was referred to by Syme as claiming to have excised the upper jaw for naso-pharyngeal polypus at about the same date (1832), but I have not been able to find any record of his case." This, the first American operation, was announced in the "American Journal of Medical Sciences" in January, 1842, and is again referred to in the same journal, Vol. V, new series, pages 87–91. It is given in detail in the American edition of Velpeau's Surgery, edited by Mott, Vol. II, page 906. To ascertain the present views of the profession in this country, I have reviewed our standard works and medical journals. I have also addressed letters to many of the leading surgeons and laryngologists east of St. Louis. The conclusions reached are briefly summarised.

In the table presented by Dr. Lincoln, of the seventy-four cases reported, in but fifteen was the jaw resected by American surgeons. With the case of Mott, I can add thirteen more. The appended table furnishes the noteworthy points in the cases operated.

In all, the growths had attained considerable size. They were attached to the body of the spheno-occipital bone, and had, as a rule, attachments to the wings or plates of the sphenoid and the walls of the nasal fossæ. Some were also adher-

ent to the petrous portion of the temporal, while others sent processes into the pterygo-maxillary, zygomatic, and other fossæ. In three cases—two under the care of R. F. Weir, and one of Geo. F. Shrady—there were prolongations extending through foramina into the cavity of the cranium. In none of these had any brain symptoms been manifested, nor had any of the experienced surgeons and laryngologists, who had examined the patients and were present at the operations, suspected any cerebral complications. They were, of course, all fatal. The conclusion naturally reached is, that it is manifestly impossible to ascertain, prior to operation, the extent of these tumors. For this reason, the operation offering the freest exposure of the growth is to be selected.

Many of the cases had submited to other operative measures, and came to this formidable step as a last resort. In each it was evident that the afflicted was suffering with a disease that must ultimately be fatal. In many cases death was apparently near at hand. The tumors were often of malignant character. In none was the condition of the patient favorable for a capital operation.

It is not remarkable, then, that in the cities of New York and Philadelphia, the result of operative interference has been most discouraging. Dr. G. F. Shrady writes me,—"With two exceptions of comparatively small tumors, all the operations performed in this city have died from shock within twenty-four hours. Hence, as you will see, the operation is not destined to be a popular one, although its formidable character has an attraction for the ambitious surgeon. I have seen three cases lately, and have advised against the operation in view of my past experience. I still believe, however, that under favorable circumstances, and with great care in manipulation at the base of the skull, the operation can be made successful. It would be better to leave some of the growth for a secondary operation, than to do too much scraping upon parts which are so plentifully and directly supplied with the inosculations of such important cerebral nerves."

Dr. D. H. Goodwillie informs me that he saw one case in

the hands of a general surgeon die on the table, and knows of others that ended fatally by resection.

Dr. Carl Seiler, of Philadelphia, writes,—"I have seen the operation performed several times, but the patients all died."

One cannot express surprise at the tone of these letters. To me, on the contrary, it is rather surprising that a condition which, as Wagner says, seeks relief through an operation occasioning often fearful hæmorrhage, tremendous shock, and incurring the risk of septicæmia and meningitis, has ever met a successful issue. But when out of twenty-eight cases,—and these are not selected, but the list contains every American case that I could reach,—but nine deaths are reported, we must surely say that few operations looked upon as a *dernier ressort* can present such figures.

Another point not to be lost sight of is, that fatal results have often followed apparently minor operations in the naso-pharynx. Cooper Forster tore away a mass with a forceps after his snare had been broken. Four days later his patient became unconscious, and death followed on the twelfth day from arachnitis. Beverly Robinson and D. H. Goodwillie write me of a case that died, shortly after an operation with the galvano-cautery loop, from heart failure.

J. Solis Cohen, Carl Seiler, E. F. Ingals, E. L. Shurly, J. N. Mackenzie, and other leading laryngologists, have never met with cases which the galvano-cautery loop, the snare, or cutting forceps would not remove. But no amount of patience or dexterity will always succeed with these measures. Preliminary resection of the superior maxilla brings every point of attachment within reach. It offers every opportunity to attack the sources of hæmorrhage.

Regarding the method of operation, the table shows that Maisonneuve was followed nine times, Fergusson eight, Velpeau and Mott each once, in doing complete or partial resection. Temporary displacement has been performed four times after Langenbeck's method, and five times after that of Cheever. Of the latter, two were double. There can be no question that Fergusson's incision occasions less hæmorrhage,

and offers more room for free inspection and removal than does any other. Osteoplastic resection (temporary displacement), the New York surgeons have found, because of the presence of the pterygoid processes, offers but little space. Moreover, should the tumor be of malignant character, the danger of recurrence is greatly enhanced by replacing the bone. In one case the replaced bone failed to unite, and was discharged as a sequestrum. Deformity may follow failure of exact union of the bones. In complete resection, on the contrary, when the orbital plate is left intact, the disfiguration is very slight.

The position of the patient has occasioned some discussion. Weir discovered that Rose's position, *i. e.*, the head thrown well back, brings the anterior and posterior walls of the trachea so closely together that the danger of asphyxia is greatly increased, and venous hæmorrhage encouraged. L. McLane Tiffany, of Baltimore, favors the prone position; that is, his patient rests upon the chest and abdomen. The chest is brought over the edge of the table; the head and shoulders are supported by assistants, and directed as the operator may wish. In this manner he has operated, he informs me, experiencing no inconvenience from bleeding, resecting the superior maxilla, and scraping the base of the skull with a Volkmann's spoon. He had very serious difficulty in administering ether to perform preliminary tracheotomy, the patient being on his back. The tumor dropped down and obstructed respiration by pressing upon the epiglottis. Passing the finger into the mouth to raise up the growth caused a free loss of blood, which entered the benumbed larynx and caused asphyxia. The patient was stood upon his head, and in this position the trachea was opened. Very naturally, he objects to tracheotomy as a preliminary step. Ashhurst also thinks that it complicates matters. But the profession here generally look upon it with favor. It permits tamponing the throat, and thus prevents death from the entrance of blood into the air-passages, as occurred in the case of Sir Prescott Hewitt. In the twenty-eight cases, preliminary tracheotomy

is reported to have been performed thirteen times. In twelve cases no mention of its performance or non-performance is made. A sponge tampon is generally preferred to the various instruments like those of Trendlenberg used abroad. Shrady is unquestionably right in saying that tracheotomy would be more advantageously performed two weeks in advance of, rather than just prior to, resection. This would not permit primary union, as occurs where the tube is removed at once.

The manner of separating the attachments of the growth has varied. Those who have freely used the scissors have always had excessive bleeding. As this is one of our greatest dangers, it is wiser to use the actual or galvano-cautery. Again, I should not resort to the ligature. Every precaution should be taken to reduce the loss of blood to a minimum. R. F. Weir writes me that had he been more careful in controlling superficial hæmorrhage before attacking the growth, he might have saved his fourth case. The experience of our surgeons has shown that unnecessary scraping at the base of the skull should be avoided.

Morell Mackenzie tells us that Ollier and most English surgeons pack the naso-pharynx with sponges after operation to prevent secondary hæmorrhage. I shall always feel that the styptic cotton used in my case was responsible for the septicæmia. Particularly, as I find no record of serious secondary hæmorrhage, do I believe these precautions unnecessary. Should I operate again, I shall simply use the cautery until I have controlled every bleeding point. Rarely has it been necessary to ligate for hæmorrhage.

The cases should be closely watched for recurrence of the disease. Our table states that but in six cases did this occur. In only one was a third cutting operation necessary. But even this patient, as did all others, finally overcame the persistence of the tumor to reappear. With the aid of the cautery, or escharotics applied upon the first reappearance of the disease, it can be held in abeyance, and finally controlled.

Operator.	No. of Cases.	Previous Operative Treatment.	Method of Operation.	Recurrence.	Character of Growth.	Tracheotomy.	Ultimate Results.
D. W. Cheever, Boston.	1 *	1st. 13 months prior, an operation for relief,—character not stated.	Langenbeck: Division of attachment with scissors; subsequent cauterisation with nitric acid.	Recurred after 11 months. Reoperated.	Not stated.	Not stated.	Recovery.
	5						
	2 *	2d. None recorded.	Cheever: Temporary displacement of both maxillæ; attachments severed and bone scraped.	.....	Fibrous.	Not stated.	Death, 120 hours after operation, from shock.
	3 *	3d. None recorded.	Cheever: Modification of Langenbeck. Detached with scissors and cauterised with nitric acid.	No recurrence.	Probably fibrous.	Not stated.	Recovery.
	4 *	4th. Removed when small, with the galvano cautery loop.	Cheever: Modification of Langenbeck. Attachments severed and bone scraped.	No recurrence.	Fibrous.	Not stated.	Recovery.
	5 **	5th. Not stated.	Cheever: Modification of Langenbeck.	No recurrence.	Not stated.	Not stated.	Recovery.
Robt. F. Weir, New York.	6 *	1st. None recorded.	All of Maisonneuve's ablation of lower half of the maxilla.	.....	All cases of Sarcoma.	Rendered necessary during operation.	Fatal within an hour after operation.
	7 **	2d. Not stated.				In the remaining four, tracheotomy done preliminary to resection.	Of the remaining cases, in two there were prolongations into the cranium.
	8 5 **	3d. Not stated.					
	9 **	4th. Not stated.					Of the four, three died, one recovered. More care in securing bleeding points before attacking main growth would have avoided a fatal issue in the 4th case.
	10 **	5th. Not stated.					

* From the table presented by Rufus P. Lincoln to American Laryngological Association in 1883.
** Communicated to writer by the operator.

Operator.	No. of Cases.	Previous Operative Treatment.	Method of Operation.	Recurrence.	Character of Growth.	Tracheotomy.	Ultimate Result.
J. McLane Tiffany, Baltimore. 11	*	1st. Removed by cold wire loop. Tumor came away after three days.	Cheever: Temporary depression of both maxillæ.	None.	Fibro sarcoma.	Performed 6 days before operation, during which patient almost died.	Recovery. Died, however, six months later of some pulmonary trouble.
	3						
12	**	2d. Not stated.	Prone position. Fergusson's incision. Base of skull scraped with Volkmann's spoon.	None.	Malignant.	Not done.	Recovery.
13	**	3d. Not stated.	Prone position. Fergusson's incision.	None.	Malignant.	Not done.	Recovery.
H. B. Sands, New York. 14	*	1st. 18 months prior, an effort made to remove by palatine operation. Ecraseur broke, and severed with scissors.	Maisonneuve: Partial excision of superior maxilla, septum, and hard palate. Severed growth with galvano cautery loop.	5½ years later recurred and removed by the same operation. Followed case up with electrolysis and Paquelin cautery, as points required.	Fibrous.	Preliminary tracheotomy.	In a communication to writer, Dr. Sands says,—"Both patients recovered; one, I believe, is still living; the other died of phthisis twelve years after the operation."
	2						
15	*	2d. None.	Maisonneuve: Separated attachments with galvano cautery knife, bistoury forceps, and scissors.	Recurred and operated again six months later.	Not stated.	Preliminary tracheotomy.	
Geo. F. Shrady, New York. 16	*	1st. None mentioned.	Fergusson's incision. Removal lower half of jaw, soft palate divided; attachments severed with scissors.		Fibro sarcoma.	Preliminary tracheotomy.	Died one hour after operation, in state of collapse. Autopsy revealed a prolongation into the middle fossa of the skull, adherent to middle lobe of cerebrum.
	2						
17	**	2d. None mentioned.	Fergusson's incision. Removal lower half of jaw.		Not stated.	Preliminary tracheotomy.	Died of shock 24 hours after operation.

Operator.	No. of Cases.	Previous Operative Treatment.	Method of Operation.	Recurrence.	Character of Growth.	Tracheotomy.	Ultimate Result.
Thos. Waterman, Boston. 18	* 2	1st. None mentioned.	Langenbeck: Tumor cut and torn away. Points of attachment subsequently cauterised by Squibb's liq. ferri subsulphatis.	Not stated.	Not stated.	Not stated.	Recovery.
19	*	2d. None mentioned.	Velpeau: Tumor removed with scissors. Bone cut away and swathed in Squibb's liq. ferri subsulphat.	No recurrence at four months.	Granular; partly fibrous.	Not stated.	Recovery.
Valentine Mott, New York. 20	1	Several times with forceps, several attempts with ligature. "From first to last at least 500 attempts were made to remove it by about 50 practitioners."	Incisions: "Outside of mesial line of internal angular process of os frontis, and extended downwards to upper lip, which was divided three lines from angle of mouth," osseous parts removed. "Os nasi, a considerable portion of superior maxillary bone, os spongiosum inferius."	No return after eleven months.	Not stated.	None.	Recovery.
H. G. Clark, Boston. 21	* 1	Removed four years before, with knife.	Incision left side of nose, though middle of lip, scraped out with finger; roughened bone chiselled.	Recurred after two months. Reoperated in old scar.	Fibro cellular.	Not stated.	Recovery.
H. O. Hitchcock, Michigan. 22	* 1	Previous efforts at removal by avulsion and ecraseur.	Langenbeck: Tumor removed piecemeal.	No recurrence after three years.	Fibrous.	Not stated.	Recovery.
James L. Little, New York. 23	* 1	None mentioned.	Fergusson's method: Tumor removed with galvano cautery and scissors.		Fibrous.	Preliminary tracheotomy.	Very much prostrated after operation. Died suddenly the following morning.

Operator.	No. of Cases.	Previous Operative Treatment.	Method of Operation.	Recurrence.	Character of Growth.	Tracheotomy.	Ultimate Result.
Geo. A. Peters, New York. 24	* 1	None mentioned.	Maisonneuve.	Recurred rapidly; operation repeated; again recurred, and treated repeatedly with actual cautery. A third cutting operation was required; nearly died of hæmorrhage.	Fibroma.	Laryngotomy preliminary to resection. Tube removed at once. Union by first intention.	In his table, Dr. Lincoln says, "growing slowly and involving parts making further operations impracticable." To writer, Dr. Peters writes.—"On calling at my office a week ago it looked as though the disease was conquered."
D. Hayes Agnew, Philadelphia. 25	** 1	Not stated.	Langenbeck.	Not stated.	Not stated.	Not stated.	Jaw became spontaneously separated nine days after operation, and was removed through the mouth, as a sequestrum. Result not stated.
John Ashhurst, Jr., Philadelphia. 26	1 **	Not stated.	Fergusson.		Not stated.	Not stated.	Fatal after operation, from shock.
J. O. Roe, Rochester, N. Y. 27	** 1	Not stated.	Fergusson.	Recurred soon.	Malignant.	Not stated.	Not stated.
Nathan Jacobson, Syracuse, N. Y. 28	1	None.	Fergusson: Removal of superior maxilla, excepting orbital plate. Adhesion treated by searing Paquelin cautery and ligature.	No recurrence after 9 months.	Fibro-myxoma.	Preliminary tracheotomy.	Recovery.

Summary: Number of cases, 28. Previous operative procedures mentioned in 7, not stated in 19, none in 2. Method of operation: Maisonneuve. 9; Fergusson, 8; Cheever, 5; Langenbeck, 4; Mott, 1; Velpeau 1. Recurrence in 6, none in 11, not stated in 2. Reoperation in 5 patients, one of whom submitted to three cutting operations. Character of growths: Not stated, 8; fibroma, 7; sarcoma, 5; malignant, 3; fibro sarcoma, 2; fibro cellular, 1; fibro myxoma, 1; glandular, partly fibrous, 1; preliminary tracheotomy, 13; not stated, 12; not done, 3. Result: Recoveries, 17; deaths, 9; not stated, 2.

ON NEPHRECTOMY.

By E. D. Ferguson, M. D., of Rensselaer County.

Read by title, November 17, 1886.

The history of the surgical treatment of the kidney is a striking exemplification of the essential unity of the Science of Medicine. Dr. Henry Morris recalls the words of Lawrence, to the effect that the "kidney is fortunately beyond the reach of the surgeon"—an assumption certainly not justified by recent events.

I bring in this paper the contribution of only a single case of nephrectomy, and my excuse is, that though the operation since its first deliberate performance by Simon, of Heidelberg, in 1869, has been now repeated a large number of times, it is not so thoroughly before the profession but that the recounting of a single case may be of some interest:

The patient, a woman about thirty-five years of age, first came under my observation in December, 1883, with a history of frequent urination, beginning some months previously; and though the urine was described as being at first perfectly clear, the case was diagnosticated as an inflammation of the bladder, and vesical irrigation was practised for some time, the urine finally becoming purulent and ammoniacal in odor. I found a tumor in the right renal region, and concluded from a full analysis of the symptoms that probably the first vesical symptoms had been due to irritation in the pelvis of the kidney, and that a cystitis had developed, leading secondarily to suppurative pyelitis. She was considerably emaciated, and gave the usual history of rigors and fever. By means of rest in bed, tonics, benzoic acid, etc., she materially improved; the fever disappeared; the pus in the urine was reduced to a trace; her appetite returned, and with it a fair restoration of flesh and strength. Though the question of nephrotomy, or nephrectomy, had been early suggested as a contingency to be considered, her improvement was such as to warrant its postponement and possible omission, though there was still enlargement of the right kidney. She returned to her home in the spring of 1884, and remained in fair health till the summer of

1885, when she became ill with symptoms which she called malaria, but which doubtless were due to a return of active trouble in the kidney. On the 15th of December, 1885, she again consulted me, and her disease was now evidently making rapid progress toward a fatal issue. I could give no encouragement to her family, but agreed to operate by nephrectomy, or nephrotomy, as should be found proper at the time of the operation. Under my advice she consulted Dr. T. Gaillard Thomas, and he concurring with the opinion and advice given, the operation was performed on Feb. 1st of this year. The relief from the fever and pain was complete, but no urine was secreted by the remaining kidney; and about thirty-six hours after the operation she developed uræmic symptoms, and died on the third day following the removal of the kidney. An autopsy could not be obtained.

I herewith present the specimen,—the kidney enucleated from within its capsule. It does not show, since its preservation in alcohol, the fact that it was so distended as to contain about twelve ounces of pus, which was evacuated in order to give access to the hilus for the ligation of the pedicle. The only calculus found was a small mass—probably oxalate of lime—about the size of a barley corn, and since lost. Whether other calculi were lodged farther down in the ureter is a question, but I concluded, for reasons not necessary to state here, that such was the case.

There were a few points made clear to me in the performance of this operation, the most important of which is that the special difficulties of the operation will usually be encountered in properly securing the pedicle. If the tumor be of considerable magnitude, and there be evidence of inability to reduce the size by the evacuation of fluid, the abdominal incision at the external border of the rectus muscle, as recommended by Langenbeck, will be preferable, thereby more readily reaching the posterior abdominal walls external to the colon, whereby the renal pedicle can be seized and ligated previous to enucleation; but, on the other hand, if the tumor be small, or susceptible of being reduced in volume, and the space between the crest of the ilium and the ribs be not too contracted, the incision in the loin will be preferable, on the ground of avoidance of opening the abdominal cavity and the ease of execution of the steps of the operation.

The steps of the operation up to the exposure of the kidney are comparatively simple, by taking as the prominent guide in the deeper portions of the wound the fibres of the quadratus lumborum. The first incision should begin a finger's breadth below the last rib, about an inch posterior to the external border of the quadratus lumborum, or rather erector spinæ muscle, and extended forward, or forward and downward, from four to six inches. After the division of the abdominal muscles and exposure of the fibres of the quadratus lumborum, it only remains to divide the deep layer of the lumbar fascia, when the capsule of the kidney will be exposed by tearing through the fatty tissue surrounding it. If nephrotomy only be intended, the operation so far is one of exceeding simplicity, provided there be no unusual obstacles in the conformation of the patient or tumor. For the purpose of enucleation the pedicle is to be reached within or without the capsule, as may be found more convenient, by separating the tissues by the finger of the operator. Unless perinephritic inflammation has complicated the case, this step of the operation will not be found difficult; but should inflammation have matted the tissues so as to remove anatomical landmarks, it may be better to do nephrotomy with drainage rather than assume the immediate dangers connected with a blind hunt for the vessels of the pedicle. The size of the renal vessels is such that special care must be taken to insure their safe ligation, and this is to be accomplished in a deep and contracted space, with the tumor between the pedicle and the eye of the operator. The perinæal needle is convenient for transfixion, but the catching and withdrawal of the thread from the eye is not an easy procedure. In this case I happened to have at hand a Peaslee needle, and by unscrewing the handle I was enabled to draw through the needle part of the instrument, thus arranging the two strands of the ligature. Since then I have had constructed a needle, which I now exhibit, similar to the Peaslee needle, except that the portion unscrewing is short, and thereby can be readily turned and withdrawn from the deep portion of the wound. The points are made of varying

curves, some with blunt and some with sharp extremities, and probably the blunt-pointed tips would be preferable in the lessened liability to a puncture of the vessels of the pedicle. After the ligation of the pedicle into two parts by the means just detailed, it will be safe to drag the kidney more forcibly from its bed, and it will be wise to reinforce the first ligation by an additional one thrown around the entire pedicle at a deeper point, if possible, and this should also include the vessels and the ureter, as any effort to separate them would be liable to do harm. All that remains to be done is the removal of the tumor at a point external to the ligatures, which can be accomplished by scissors, cutting external to the fingers acting as a guard over the line of the ligature, and the dressing of the wound, with drainage.

I have only to add that in my opinion any effort, by means of compression of an ureter by rectal levers, or other devices, to ascertain the state of the other kidney, will usually be found impracticable, or, if practicable, would subject the patient to an ordeal which in serious cases should be considered as an operative procedure, the influence of which it would be improper to add to the major operation.

A PLEA FOR THE USE OF SIMS'S SPÈCULUM BY THE GENERAL PRACTITIONER.

By Wm. H. Robb, M. D., of Montgomery County.

November 17, 1886.

To those of my hearers who are now using Sims's speculum I doubtless owe an apology for asking their attention to the following paper. It is for those who are not using this instrument that my remarks are especially intended. A plea for the use of Sims's speculum by the general practitioner is believed to be timely, as it is known that many in general practice seldom or never use it.

The instrument, as you all know, was invented in 1845. Its construction and the method of using it were given to the profession through the pages of the "American Journal of Medical Sciences," January, 1852. It was perfected and given to the medical world as we now find it in 1853. Although many improvements have been attempted and modifications made, it is safe to say that Sims's speculum, as he improved and perfected it, has never been and I believe can never be improved. It is perfect. It is neither my object nor desire to urge the use of this instrument upon those who are making extensive and tedious surgical operations upon either the cervix or vagina. It is safe to assume that no one would attempt an operation of any magnitude on these parts without its aid. It is in the primary examination of patients, and in the treatment of their simple or every day ailments, that I would particularly recommend this speculum. The most serious objections raised against the use of it have been that it always requires the aid of an assistant, that the peculiar position necessary is irksome to the patient, and that the woman is unnecessarily exposed. If these objections can

be overcome, it is safe to predict that this instrument would soon be more generally used, in fact, that it would be the physician's every-day speculum. To visit the Woman's Hospital of New York, and to witness a single operation, or even a speculum examination, is to convince one that there need be no exposure in using this instrument. The parts are neatly and completely covered by sheet and napkin. Sims's position is rarely complained of as fatiguing, and never when once assured that there is no exposure of person. In all tedious operations it is necessary to have an assistant to hold the speculum. No woman suffering from disease or injury requiring such operation will object or refuse to have the third party present. If she is assured of the necessity, she will not object to having several assistants present.

It is not in these cases, however, that I am urging the use of Sims's speculum. It is my desire to show you that this speculum can be used as successfully as any other by the physician, both in making his first examination, as well as in the subsequent dressings ordinarily used by gynæcologists. I shall endeavor to convince you that he can often use it without an assistant. It is well to be provided with three of Sims's specula differing in size, so that one of the six blades will be suited to make any individual examination. A depressor, tenaculum, probe, dressing-forceps, curette, applicator, and spear, are the accessories often needed. A head mirror will occasionally be required so that we may use reflected light. An examination with a speculum should be preceded by palpating the abdomen. This necessitates the loosening of the patient's clothing, and helps us to win her confidence, both essential in furthering our examination with the speculum. The digital examination follows, which together with conjoined manipulation affords us much valuable information as regards the patient's condition. These examinations are made with the patient resting on her back, either upon a table, chair, bed, or sofa. In general practice we cannot see all of our gynæcological patients at our offices, thus availing ourselves of well constructed tables or chairs, together

with a good light. We must visit many of them at their homes and accommodate ourselves to the conveniences there offered us. If a good light can be obtained and a table secured, we can readily cushion it up with pillows and blankets so as to make it as useful as any of the more extravagant ones found in the office of the specialist. Bed or sofa is prepared in a similar way. In using either of these we are often obliged to use the head mirror by which we are supplied with the necessary reflected light, derived from a window situated too high to transmit the rays of light directly into the speculum, or from a gas-jet or lamp placed in a suitable position.

With these preliminary arrangements made, and with the knowledge gained by the digital and conjoined manipulation referred to, we are enabled to select the speculum most suited to the individual. This with the depressor may now be placed in a basin of warm water ready for use. We now place the patient on whatever object we have prepared for her, in the position recommended by Sims, with two slight modifications; the body is covered with a sheet, and a napkin placed between the thighs and resting against the left side of the nates so as to protect the clothing of the patient as well as to form a partial covering for her. From Sims's work on Uterine Surgery, page 23, I make the following quotation: "For a speculum examination the patient is to lie on the left side, the thighs are to be flexed at about right angles with the pelvis, the right being drawn up a little more than the left; the left arm is thrown behind across the back, and the chest rotated forward bringing the sternum very nearly in contact with the table, while the spine is fully extended, with the head resting on the left parietal bone. The head must not be flexed on the sternum nor the right shoulder elevated. Indeed, the position must simulate that on the knees as much as possible, and for this reason the patient is rolled over on the front, making it a left lateral semi-prone position." This is the position advised by, and called after, Sims. The modifications of this position above referred to consist in carrying the right knee far enough in advance of

the left one to allow it to drop down and rest on the surface upon which the patient is lying, and in requiring the woman to twist the right hip forward as much as possible in advance of the left one. Both of these changes in position help to bring the pelvis more nearly in the position attained by having the patient on her knees. With the woman in this position, we can make most of our examinations without an assistant. The speculum already selected and warmed is well lubricated with either vaseline or lard, and placed in the right hand, the index finger occupying the hollow of the blade and projecting a little beyond its end. With the left hand we elevate the right side of the nates and partially separate the labia through which the index of the right hand guides the speculum into the vagina beyond and behind the cervix. The finger is now withdrawn, leaving the blade of the speculum well up into the vagina, and the handle resting against the left side of the nates. In most cases it will remain in this position indefinitely so long as the woman keeps in the same position and avoids straining. It will, however, occasionally escape from the vulva when thus left, but it is only in cases where the perinæum has been destroyed and the vagina lost its tone. We take this opportunity to secure the depressor and such other instruments as we may think needed. If the nates are large and pendulous, we direct the patient to place her right hand over the right side and elevate them. With the left hand around the free blade of the speculum we carefully and slowly lift it upward until the handle is opposite the coccyx, when we grasp the handle near the vulva with the right hand, which keeps the opposite blade well up into the vagina, and helps to elevate and retract the perinæum. While this is being done the air enters into and fully dilates the vagina. A depressor is only needed when the uterus is anteverted or pushed from its normal position by abnormal growths or inflammatory deposits or adhesions. The parts thus opened may be inspected at leisure; the left hand is quite sufficient to keep the perinæum retracted while we may use the right one to mop out any secretion that may

cover the cervix or vagina. A very convenient instrument for this purpose can be made from a slender piece of hickory or ash ten inches long, round at one end and a little flattened at the other. A little absorbent cotton wrapped about the rounded end prepares it for use. If we find an abundant secretion, we may be obliged to replace this cotton with new. The speculum is allowed to rest against the left side of the nates again, as when first introduced. We are thus afforded time to renew the cotton, change the position of the table or chair, procure any dressing, tie up tampons, etc. When fully prepared, we grasp the speculum as before and elevate the perinæum, leaving it to be controlled by the left hand. With the right hand we continue the use of the cotton until the parts are thoroughly cleansed.

By inquiry of some of my most intelligent patients I have satisfied myself that by alternating the traction upon the perinæum with an interval of relaxation or rest, much less inconvenience is caused than when the parts are kept constantly upon the stretch. The parts being exposed, we note their condition and decide upon treatment. In this way we can alone scarify the cervix, puncture an inflamed gland, make applications to the cervical canal, and do much that will help to relieve our patient's suffering. In all cases of acute pelvic inflammation we should never think of using any but a Sims speculum. I do not think that any of the cylindrical or valvular ones could be used without increasing the trouble. I have good reasons to believe that in my own practice cases of pelvic cellulitis have been injured by the use of a valvular speculum, and their recoveries protracted indefinitely. One of my most respected friends assured me but a few days ago that by the use of a valvular instrument he had excited in one of his patients a severe attack of cellulitis. In cases of cancer, either of the neck or the vagina, I am sure no one here would attempt to use any but a Sims. Through this speculum the curette can be applied more thoroughly, the probe passed more safely, and a tampon placed more securely than through any other instrument.

Dr. Emmet, in his valuable work on the Principles and Practice of Gynæcology says,—"I have known both retroversion and prolapse of the uterus to occur from repeated use of a valvular speculum which stretched the upper portion of the passage." In speaking of different kinds of specula, he says,—"The amount of space and light obtained by any of these instruments is very small in comparison with what is afforded by Sims's speculum, and they are useless for all surgical procedures." To farther support the plea for the use of the Sims speculum, I will quote another paragraph from the same author: "In a single generation the use of this instrument has advanced the knowledge and treatment of the diseases, and especially of the injuries of women, from profound ignorance to a front rank, if, indeed, not beyond that of any other branch of surgery." In concluding my plea, allow me to ask, to even urge, every one who is not in the habit of using this instrument, to try it on his first patient. Use it with an assistant when you can, and without one when you must; use it for diagnostic purposes, for treatment at the home of your patient, at your office, wherever and whenever you need a speculum, and in a few months you will say, as did its immortal inventor, Dr. Sims, "It is the best speculum for any purpose, whether it be for the application of the simplest dressing or for the execution of the most difficult operation."

CONGENITAL OCCLUSION OF THE POSTERIOR NARES.

By Alvin A. Hubbell, M. D., of Erie County.

November 17, 1886.

Because of the rare occurrence of congenital occlusion of the posterior nares (choanæ), I have been constrained to place upon record a case of this interesting deformity which I have had the opportunity of observing and treating, and also to accompany the report with brief notes of such other cases as I have been able to find in surgical literature.

On September 1, 1883, G. R. M., a young man, 18 years of age, was brought to me by Dr. L. W. Tarbox, of South Dayton, N. Y. He gave me the following history: He was the tenth child of a family of eleven children, all the rest of whom were well formed and generally free from any physical defects, excepting that two sisters had obstruction of one nostril from "vomer bone growing to one side." Soon after birth it was noticed that he could not breathe through his nose. It was impossible for him to suckle, and, while very young, much trouble was experienced in keeping his mouth open so that he could breathe through it, especially when asleep. He was a vigorous baby, and notwithstanding this drawback in respiration, he thrived well and grew rapidly. As he became older his sleep was less disturbed by difficult breathing, the greatest annoyance then experienced arising from the lips, mouth, and throat becoming very dry. He had never had any sickness, excepting an attack of croup when he was three years old.

At this consultation he was a strong, well developed young man, somewhat short in stature, and weighing about 160 pounds. He breathed entirely through the mouth, being obliged to keep it more or less open for this purpose, thus giving him an unpleasant facial expression. His words were spoken with an entire absence of the nasal sounds. He said it was "harder for me [him] than others to drink, swallow, or chew food." Taste was good. The sense of smell was "very weak," if he could "smell at all." Mucus discharged freely from the nose, and was a source of much annoyance to him. His hearing was acute, and he never had disturbances of any kind in his ears. The membranæ tympani were normal in appearance, and the Eustachian tubes were freely permeable, permitting easy inflation of the

tympanic cavity. The nose was quite large, and its cavities, anteriorly, were of normal shape and full size. The mucous membrane, however, lining these cavities, was more or less swollen and congested. The inferior meatus on either side was large, and extended backward to a depth of five centimetres (one and a half inches), when an obstruction was met which was firm and complete. An examination of the posterior nares, with the index finger passed behind and above the palate, showed a well marked, somewhat conical depression on each side, about six millimetres (one fourth of an inch) deep. The posterior border of the vomer was prominent, and distinctly separated the two depressions. A rhinoscopic examination was not practicable.

To determine the character of the obstructing partition and the line of treatment to be pursued, I passed a medium-sized trocar through the one on the left side. I found the occlusion to be a thin, bony plate, covered on both sides with mucous membrane. It was penetrated without much force by giving the instrument a drilling or rotatory movement. Having thus determined the character of the obstruction, it was deemed best to make as large an opening as possible by means of a drill as large as the inferior meatus in front would admit.

The patient was admitted to the Buffalo Hospital of the Sisters of Charity and the operation was made Sept. 21st, with the assistance of Dr. Tarbox and residents Murphy and Hill. The patient was anæsthetized with chloroform, and with a hand-drill having a diameter of thirteen millimetres (over one half inch), and with edges well sharpened, each partition wall was carefully penetrated by rotatory movements of the instrument, and free openings made. There was considerable hæmorrhage, but this soon ceased. Breathing through both sides of the nose took place at once, and was free and easy. After recovery from the anæsthetic, the patient expressed himself as feeling a sense of comfort which he had never known before. He was kept in bed a day or two, and the nose was cleansed with carbolised water. To keep the openings sufficiently large and free, sounds and tents were afterwards introduced regularly twice a day. The patient was discharged September 29th, with nasal respiration easy, both when awake and asleep.

November 17th the patient returned to me with the openings so much contracted, notwithstanding the efforts to keep them large, that breathing through them was somewhat difficult, and it was necessary for him, during a part of the time, to breathe through the mouth. I decided to repeat the previous operation and endeavor to keep the openings of sufficient capacity by inserting as large-sized tubes as possible, and retaining them till the healing process was nearly or quite complete. I had tubes of "block tin" made of two sizes from which to choose, the diameter of one size being ten millimetres (less than one half inch), that of the other thirteen millimetres (more than one half inch), and their length five centimetres (two inches). The patient having been placed in the hospital as before, he was again

anæsthetized with chloroform, when I proceeded to repeat the previous operation with the drill, my colleague, Dr. John Cronyn, and Drs. Tarbox, Hill, and Murphy, kindly assisting. After the hæmorrhage from the operation had ceased, the parts were cleansed with carbolised water, and an attempt was made to introduce the larger tubes. These were found to be too large to be safely used, on account of their making severe pressure on the vomer, alæ, inferior turbinated bones, and surrounding parts. The smaller tubes were therefore introduced, and proved to be of ample size for the parts without making undue pressure at any point. When in place they were almost entirely hidden from view, and posteriorly they projected to a plane corresponding with that of the posterior margin of the vomer. Previous to their introduction a small cord was inserted into a hole in the anterior extremity of each tube to facilitate removal. This when not in use was placed within the tube out of sight. The patient breathed easily through the tubes, and he was permitted to leave the city November 24th with directions to cleanse the parts as effectually as possible, and as frequently as seemed necessary, with carbolised water.

On December 28th, about six weeks after the operation, the tube in the right nostril was accidentally withdrawn by the patient, and on January 5th, 1884, about seven weeks after the operation, I removed the one in the left side. Both tubes were held in place quite firmly at first, but afterward were loosened and came away easily. After removal of the tubes the openings through the obstructing partition were found almost entirely healed, and they were fully as large as the diameter of the tubes. The case has been seen recently, and, although the openings have contracted somewhat, the space is sufficient for free nasal respiration.

After the operation, the patient could not at first properly regulate the action of the palate in speech, so as to cut off certain sounds that should not pass through the nose, and his articulation was, therefore, too nasal. In a short time, however, he so educated the palatal muscles as to be able to give the sounds of the vowels and of such consonants as g, k, b, etc. The acts of mastication and swallowing were accomplished with ease, the mouth was kept closed as in other persons, and the facial expression was changed so as to appear perfectly normal. The sense of smell had not improved, but the anosmia continued complete, indicating, undoubtedly, a want of development of the olfactory nerve.

A point worthy of emphasis is the fact that there had never been any disturbance of hearing, and the Eustachian tubes,

tympanic cavities, and membranæ tympani were normal in all respects, although the conditions of Toynbee's experiment were constantly present. As is well known, this experiment consists in tightly closing the nostrils, when continued acts of swallowing will exhaust the air within the tympanic cavities to the extent of materially disturbing the equilibrium of atmospheric pressure between the middle and external ear, and thus inducing changes, observable by the surgeon, and felt, even to a distressing degree, by the patient.

A careful examination of medical literature shows but few reported cases of congenital stenosis of the choanæ. The first reference that I can find made to this condition was by Adolph Wilhelm Otto, M. D.,[1] of Breslau, in 1831, who said,—"In congenital closure of the hinder opening of the nostrils, the palatine bones are very much deformed." Otto thus implies that such cases had been seen, but he does not cite any.

Karl Emmert[2] was the first to record a case which came under his observation in 1851. The patient was a boy seven years old, who had been unable to breathe through the nose from birth. He had been nourished with great difficulty during infancy, and often had suffocative attacks during sleep. Both choanæ were entirely closed, and mucus and tears were constantly discharging from the nose, and the sense of smell was wanting. The occlusion was found, both by preliminary examination and by operation, to be bony; but it was impossible to ascertain in what manner or from which bones the partition wall arose.

Emmert penetrated the obstructions with a specially constructed trocar, and enlarged the openings by the introduction of the catheter. Tubes were also introduced, and worn at times for half a year. The father of this boy had had syphilitic disease of the pharynx.

The next record was made by Luschka,[3] in 1859. He

[1] Compendium of Human and Comparative Pathological Anatomy, translated by John F. South, London, 1831, p. 181.

[2] Lehrbuch der Chirurgie, Stuttgart, 1853, Bd. II, S. 355.

[3] Arch. f. Path. Anat., XVIII, 1859; also der Schlundkopf des Menschen, Tübingen, 1868, S. 27.

describes the case of a female infant who died shortly after birth, in whom both posterior nares were occluded, and in whom also many other deformities existed. A post-mortem examination showed that the occlusion on each side was a bony plate, which extended from the palate bone, upward and backward, to the lower surface of the sphenoid. Laterally, each plate reached to the inner side of the internal plate of the pterygoid process, while in the median line they approached each other, being separated by a narrow slit, which received the posterior extremity of the rudimentary vomer, and were united below where the posterior nasal spine usually arises from the palate bones.

R. Voltolini,[1] in 1871, gives the history of a medical student who suffered with closure of the right choana, which was apparently membranous, and due to "congenital adhesions." It was successfully opened by means of the galvano-cautery.

Fraenkel[2] mentions a case sent to him by Dr. J. Wolff, in which there was a bony closure of the posterior nares on the right side. The patient was a young man "who had been unable to blow his right nostril," and "had been excessively troubled by the accumulations sometimes escaping in front." Wolff had established the diagnosis by means of palpation of the pharynx and probing the nasal canal, and had perforated the bony partition wall by "an operation." Fraenkel satisfied himself that the obstruction was a "smooth and solid wall, covered on both sides with mucous membrane, and closing the right fossa in precisely the same manner as described by Luschka. The crista of the septum showed itself, even on the closed side, as a narrow strip. No other abnormality could be seen." The opening which Wolff had made contracted to the size of a pea, but afforded entire relief.

Bitot[3] (misprinted "Betts" in Mackenzie, "On the Nose and Throat"), of France, relates a case of "atresia, or obstruction of the posterior orifices of the nasal fossæ, by two triangular

[1] Die Anwendung des Galvanokaustik im Innern des Kehlkopfes und Schlundkopfes, Wein, II Aufl., 1871, S. 260.

[2] Ziemssen's Cyclopædia of the Practice of Medicine, 1876, Vol. IV, p. 113.

[3] Archiv. de Toxocologie, Sept., 1876 (N. Y. Med. Jour., July, 1877, pp. 92 and 97).

bones (naso-palatine bones)," of which the "New York Medical Journal" makes the following note: In a fœtus of seven months, the nasal fossæ "posteriorly were imperforate, the obstruction being due to the presence of two triangular bones of a more or less regular shape, articulating above with the sphenoid, below with the *os quadratum*, or the horizontal portion of the palatine bone. Exteriorly, their borders corresponded with those of the internal wings of the pterygoid apophyses, while internally they infringed one upon the other and formed a median fissure."

At a séance of the Paris Academy of Medicine, held Aug. 29, 1876, M. Gosselin[1] reported the case of a girl who had had "symptoms of impaired respiration, felt by the young patient as if she had been suffering from a coryza." Attempts to pass sounds or to inject water through the affected side into the pharynx were made in vain. By carrying the finger behind the velum palati to the point where the posterior opening should have been made, Gosselin became "satisfied of the presence of a resisting plane," and he concluded that "there was an obliteration similar to the one which M. Bitot had spoken of before the Academy." No operation was performed, although he thought one justifiable. He does not state on which side the obstruction existed, nor does he inform us whether it was bony or membranous, but I infer that it was bony.

E. Zaufal,[2] of Prague, published, in 1876, the description of the case of a girl fifteen years of age, with congenital stenosis of the right choana. The obstruction was bony, and was a little in front of the posterior edge of the choana, and at a distance of five and a half centimetres from the front. The plate was placed across the aperture in an oblique direction, extending from within, outward and backward, and from below, upward and backward. On the left side the nasal

[1] Since the reading of this paper, Nov. 17, 1886, and through the kindness of Dr. Geo. M. Lefferts, of New York, I have been able to verify Gosselin's case, which I now have the pleasure of incorporating. For the original report, see "Gazette Médicale de Paris," Sept. 2, 1876, p. 430.

[2] Prager Medicinische Wochenschrift, 1876, No. 45, p. 837.

cavities were normal, and on the right, in front of the obstruction, of full size; but the mucous membrane here was swollen, and yielded a free secretion, and the edge of the nostril was excoriated. The forehead was high and straight, and the eyes were slightly prominent. There was blepharitis, but the patient's vision was good. The hearing was acute, and the voice natural, without any nasal character. The sense of smell was absent on the obstructed side, but acute on the other. No operation was performed.

The next case in chronological order was recorded by Dr. J. Solis Cohen,[1] of Philadelphia, in 1879. It was that of "an infant," who had great difficulty in suckling and breathing, and suffered frequent suffocative paroxysms. The child was relieved by "boring through the occluding structures with a knife and steel probe," which was followed by the insertion of a sound from time to time, and the introduction of small bits of sponge securely fastened to a holder.

Dr. T. G. Morton,[2] of Philadelphia, treated the following case in the Pennsylvania hospital: "John B, æt. eight years, was admitted for almost an entire occlusion of the left side of the nostril. The affection had existed from infancy. Had been treated on several occasions without benefit. On being brought to the hospital, Dr. Morton found that a delicate probe could be pushed back between the sides of the nose at its lower part. A sponge tent was then introduced, which, after remaining for four days, had stretched the parts sufficiently for the passage of a large catheter. The opening showed no disposition to close. The child was subsequently brought to the hospital for examination, and the result was entirely satisfactory."

Dr. T. R. Ronaldson,[3] of Edinburgh, gives the notes of a case which he saw in 1881, of a plump and well developed female child, which was delivered after a short and easy labor, in whom existed obstructions of the nasal passages. When it

[1] Diseases of the Throat and Nasal Passages, second ed., 1879, p. 385.
[2] Surgery in the Pennsylvania Hospital, 1880, p. 333.
[3] Edinburgh Medical Journal, May, 1881, p. 1035.

was born it was noticed that the breathing was not natural, and in attempts to inspire, "the under lip and cheeks were sucked in," and the lungs were not inflated. It was made to cry by slapping the buttocks, when respiration took place, which was afterwards free, when the mouth was open and the tongue slightly pulled forward. The nostrils were examined, and found filled with a translucent glue-like substance, which was removed *en masse*. Attempts were made to blow air through the nares, and to pass a probe, but without success. The case was diagnosed as an "organic obstruction of the posterior nares." Whenever a point of moderate asphyxia was reached, the child would open its mouth to cry, and would thus inflate its lung. Hoping that respiration would be thus kept up, the case was left, with the intention of doing something for its relief later. But contrary to the hopes of the doctor, the child died an hour after his departure. An imperfect post-mortem examination showed that the posterior nares were completely occluded by a firm membrane, through which an ordinary surgical probe "could hardly be forced without bending on itself." No other abnormality was found, "the nose, anterior nares, the hard and soft palate being normal."

Dr. Oren D. Pomeroy,[1] of New York, reported a case, in 1881, in which there was bony occlusion of the right nostril in a man forty-four years of age, which had existed "longer than he could remember." There was abundant catarrhal secretion, which was rather offensive. The closure of the nostril was a source of embarrassment in cleansing it. The nares, both anterior and posterior, were narrow. Dr. Pomeroy states that the obstruction was about half an inch anterior to the extremity of the posterior nares, that it was a "solid wall of bone" and "of no great thickness." There was considerable deafness on the affected side. He perforated the bone by drills, and using finally "a cross-cut burr drill," the head having an almond shape, and as large as could be con-

[1] Transactions of the N. Y. State Medical Society, 1881, p. 200; also Pomeroy's Diseases of the Ear, 1883, p. 201.

veniently introduced into the nostril—about two and a half lines in diameter. After three operations the opening was sufficiently large "for moderately difficult respiration through the nostril."

At a meeting of the New York Society of German Physicians, held May 27, 1881, Dr. Richard C. Brandeis,[1] of New York, showed a young girl who had come to him with a nasal obstruction of the left side. After removal of several polypi, he found a complete bony occlusion about one and three fourths inches from the nostril. The bony plate was perforated by means of the galvano-cautery, and nasal breathing was entirely restored.

Dr. T. B. Wilkerson,[2] of Young's Cross Roads, N. C., related, in 1882, the following case: W. C, æt. six years, has had no nasal respiration since birth, and, when an infant, was hand-fed, being unable to nurse from the mother's breast. The anterior outlets of the nasal passages were very small, "scarcely admitting the ordinary silver catheter," and the fossæ presented an irritated appearance. The edges of the eye-lids were red, and there was occasional "flooding" of the eyes. The mouth was open. The general mental and physical condition of the patient was good. There was no deafness, but the "special senses of smell and taste were very deficient." Careful examination showed both nasal cavities closed at their posterior outlets. The obstructions were opened by a revolving trocar and canula, made especially for the case. "Gum tubing," with holes cut in it at different points, was inserted in each side and allowed to remain six days, the parts being cleansed, in the meantime, by syringing through the tubing. A gum bougie was afterwards passed every day. The channels remained pervious, and nasal respiration was established, "adding greatly to the comfort of the patient."

Dr. Sommer,[3] of Prague, presented to the medical society of that city, in 1883, a lad, nineteen years of age, in whom there

[1] New York Medical Record, Nov. 12, 1881, p. 552.
[2] N. C. Medical Journal, June, 1882, p. 305.
[3] Weiner Medizinische Presse, April, 1883, No. 15, p. 476.

was a congenital bony occlusion of the left choana. The head had somewhat the shape of a hydrocephalic. The external nasal framework was regularly developed, and no abnormality was to be observed about the face, or in the cavity of the mouth. The right nasal cavity was wholly pervious, but the left was impenetrable, as neither air by expiration or inspiration, or water by injection, could be forced through it. The secretion of normal mucus was constantly discharging from its anterior opening, and the sense of smell was entirely wanting on this side. By anterior and posterior examination, the left choana was found entirely occluded by an obliquely standing bony plate, covered with mucous membrane. The patient declined to be operated upon.

E. Zaufal,[1] according to the reporter of Sommer's case above, mentions a second case which had come under his observation. A perfectly healthy student, fourteen years old, had stenosis of the left side of the nose, which was "wholly identical" with that of Sommer's case.

Prof. L. v. Schrötter,[2] of Vienna, last year, gave a detailed description of a case which he had treated the year before (1884). The patient, M. Auer, æt. nineteen years, was a strong and well developed farmer's daughter, with occlusion of both choanæ, which had existed from birth. The facial expression was very striking, being marked by slightly prominent eyes, mouth open, under lip somewhat hanging, naso-labial folds wanting, and the action of the alæ of the nose deficient. The secretion from the nose was free when lachrymation was increased, as in crying or long exposure to the cold air. The mouth and throat were most of the time dry, and there were occasional headaches. The hearing was below normal, taste was poor, and there was absolutely no sense of smell. The speech was a little difficult, and nasal in character. Prof. Grüber found the membranæ tympani deeply drawn inwards. The nasal fossæ were of normal size in front, but the mucous membrane, in the lower parts of these cavities, was

[1] Weiner Med. Presse, April, 1883.
[2] Monatsschrift für Ohrenheilkunde, Berlin, April, 1885, p. 97.

"granulated, swollen, and congested." Posteriorly, all parts were normal, except the mucous membrane above, which was swollen. Both choanæ were closed with diaphragms, which were set a little in front of the posterior orifices. They were at first considered membranous, but were, after operation, found to be bony. They were thickest near the outer parts, and their direction was from below, upward and backward. The treatment consisted in the repeated application of the galvano-cautery, and latterly the use of a covered chisel, to remove the thicker bony parts which the cautery did not readily destroy. The treatment was continued for several weeks. The openings were then of sufficient size for easy nasal respiration, and the patient was finally discharged May 13th (1884). She was then able to breathe freely through the nose, the speech and facial expression had greatly improved, and the sense of smell was regained, although imperfectly.

Dr. W. E. Casselberry,[1] of Chicago, relates, in 1885, the case of M. E., a Russian Polander, æt. about forty years, who had suffered during the past thirteen years from an obstruction of the nasal chambers. "Examination showed that a tense membrane covered the left choana almost completely." Its free edge was thin and sharp, and approached so near the septum narium that there was only a very small chink between the two. It could be pushed backward by the probe, and was from one to two millimetres in thickness. "The choana on the right side was partially covered by a membrane which extended about half way across the aperture." This membrane was much thicker and less tense than that on the left side. The pharyngeal mouth of the Eustachian tube could not be seen on either side with the rhinoscope, the membranes evidently lying behind them. There were many distressing symptoms in this case, from mouth-breathing and naso-pharyngeal catarrh. "Deafness in the left ear and annoying tinnitis aurium had long been prominent symptoms." There were also numerous head symptoms. The obstructions

[1] Journal of the American Medical Association, Aug. 8, 1885, p. 148.

were fully overcome by means of the galvano-cautery, the operation being repeated on each side three or four times. As soon as the nasal respiration was freely established, the patient was completely relieved of all cephalic symptoms, including the left-sided deafness.[1]

I have now presented a brief review of seventeen cases, besides my own, using as far as possible the phraseology of the original reports. The total number of cases included in this paper is, therefore, eighteen. A brief analysis of these shows that ten were males; six, females; two, sex not mentioned. Two died soon after birth, one was a seven months fœtus, and fifteen were living at the time of the respective reports. Careful post-mortem examinations were made in two cases, an imperfect one in one case. The occlusion was complete in both posterior nares in eight cases, in the right in four, in the left in three, and in one the side was not specified. It was incomplete in both nares in one case, and in the left naris in one. The occlusion was bony in thirteen cases, and membranous in five. The two cases of incomplete occlusion were of the membranous variety.

As to the genesis of these obstructions, it appears that those which are bony are developed from the perpendicular or horizontal plate of the os palatinum, or both, and thence extend across the choanæ, usually in an oblique direction from below upward and backward, and from within outward and backward, to be united with the sphenoid above, and the vomer, or its opposite fellow, at the median line. The connection of these plates with the palate bone is *indicated* by their situation in the living subject, and is *demonstrated* by the dissections that have been made.

Certain symptoms were found to be common to most of the cases. For instance, in bilateral occlusion there were the altered facial expression, difficulty in articulation, with nasal intonations, dryness of the mouth and throat, suffocative

[1] I include this among the list of cases of congenital occlusion, as the history, as given by a patient, is often very unreliable, and as I cannot conceive of an obstruction of this kind as originating otherwise than congenitally. Dr. Casselberry also suggests that "it is most likely" congenital.

attacks and respiratory difficulties in infancy, inability to suckle, etc. In these cases, and in those with unilateral atresia as well, there was also an entire absence of the sense of smell on the affected sides, together with a constant mucous discharge, the discharge being increased whenever there was an extra secretion of tears. Usually the mucous membrane corresponding to the side obstructed was found swollen and congested, at least anteriorly. Ear disturbances were sometimes noticed, and in my own case mastication and deglutition were also less easily performed than by other persons.

Regarding the treatment and results, I may add that the partition walls have been opened in different ways, and the results have generally been satisfactory. The galvano-cautery, drills of different forms, trocars, chisels, knife, tents, tubes, etc., have all been effectually used. The galvano-cautery seems to have served the best purpose when the occlusion was membranous. Various reflex and distressing symptoms have been removed by opening the closed passages, and the senses of hearing, taste, and smell have occasionally improved. In cases of double occlusion, immense relief has followed full and free nasal respiration, and with it a comfort to the patient never known before. The facial expression has become natural, and the articulation and intonation have much improved.

The prognosis is generally admitted to be unfavorable in infants, in all forms of stenosis of both nasal passages, from whatever cause. Some of the cases of double congenital occlusion have died soon after birth from undoubted asphyxia, and all of them have been reared with difficulty. This suggests timely relief by opening the obstructions without delay, in the meantime keeping the mouth open and the tongue somewhat drawn forward, so that the child can breathe till nasal respiration is established by the various means that are always at the command of the practitioner.

DISCUSSION ON PULMONARY TUBERCULOSIS.

REMARKS INTRODUCTORY TO A DISCUSSION ON PULMONARY CONSUMPTION.

By Henry D. Didama, M. D., of Onondaga County.

November 17, 1886.

That consumption of the lungs is a fairly well worn subject will not be questioned. It has engaged the attention of the keenest observers, the shrewdest pathologists, the best practitioners, for ages. Its bibliography would fill large volumes. An immense library would be required to hold the vast array of tomes and monographs and articles which it has inspired. And yet no apology need be offered for renewed consideration of a disease which still kills one seventh of the human race. Some points in its ætiology, nature, prophylaxis, and treatment yet remain moot, obscure, and unsatisfactory, notwithstanding the patient research and experimentation of past centuries, and the dazzling discoveries of the present half decade.

In the short time allotted to this subject to-day, it will not be possible for the able writers who are to follow me to present more than a condensed epitome selected from observations, discoveries, deductions, and suggestions, whose very abundance is embarrassing and almost overwhelming. May some good be the outcome of the discussion.

I. *In addition to a feeble vitality, which may be derived from parents who are or are not consumptive, do the children of consumptive parents inherit tuberculosis itself, or any special phthisical taint or tendency?*

In a paper entitled "Is tubercular consumption ever inherited?" read at the last meeting of the Association, the

writer discussed this question at some length. Farther investigation and reflection have but strengthened the convictions and opinions then expressed, that, as a rule, with few exceptions—and possibly with not a single exception—the unborn or newly born child of a consumptive parent is entirely free from tuberculous disease, taint, or tendency.

That tubercles themselves are not found in the lungs of the fœtus or the very young babe, is the latest testimony of the best observers.

That the new-born babe of a consumptive mother, when instantly removed from unhealthy surroundings and influences and shielded from bacillic infection, is likely to remain free from tuberculous disease, is also a well established fact.

That the vast majority of those who die of consumption are born of parents who are entirely free from lung disease, is the unimpeachable testimony of individual observation and of the statistics furnished by consumption hospitals and life insurance companies.

The fair inference from these facts seems to be, that consumption is acquired and not inherited; that the so-called phthisical taint or tendency is simply an impaired resisting power—a vincibility of cells—which may be inherited as well from non-consumptive parents as from consumptive ones, or may be acquired without inheritance; and that in the contest unceasingly waged between cells and destructive organisms, the vigorous cells may effectually resist while the vincible ones are overcome and destroyed.

Dr. Schwer, of Kiel ("Allgemeine Central Zeitung," No. 6, 1886), asserts that no tuberculosis exists in children under nine weeks of age. So that tuberculosis cannot be regarded as ever a congenital or connate disease. The statement in a New York medical weekly, reporting this assertion of Dr. Schwer, that "Johne a year ago reported a case of undoubted fœtal tuberculosis, and veterinarians have often shown fœtal tuberculosis in animals," is misleading. Johne's case, reported in "Fortschritte der Medicin," was tuberculosis in a calf. Several marked cases of this kind were reported by

Dr. Wise, superintendent of Willard asylum. All the cases were noticed in the paper read at the last meeting of this Association.

But no authentic modern instance of congenital *human* tuberculosis is on record. The bacilli of human and bovine tubercle resemble each other; their identity is still questioned. Miliary tubercles are readily produced in animals by inoculations with bacilli obtained from human lungs. But has characteristic *Perlsucht* ever been produced by such inoculations? And what indubitable evidence is there that a pearl nodule—the peculiarity of bovine tuberculosis—has ever been produced in man by eating the flesh or drinking the milk of consumptive cows?

II. *What are the chief habits, peculiarities, and diseases, other than consumption, which impair the constitution transmitted to children, and facilitate tubercular infection?*

Among those which I leave to my colleague, Dr. Cronyn, to elaborate are inebriety, debauchery, advanced age of the father, great disproportion between weight and high stature, various exhausting diseases, suppurations, fluxes, diabetes, cancerous affections, and the like. I select but one for emphasis. The late Dr. Gross, in lectures and addresses, was wont to declare that all chronic diseases are but varied manifestations of syphilis. He made special mention of skin affections and tubercular consumption. Perhaps we may not fully endorse the sweeping arraignment made by this careful and eminent practitioner, whose opportunities for observation were exceptionally abundant; but the larger our experience, the more reason we find to regard this loathsome scourge as a forerunner of, or an element in, a great variety of complaints. It is coming to be the rule with many practitioners, when the etiology is obscure, and the history has ignorant or lying lips, to give the patient the benefit of the doubt, and treat for syphilitic contamination.

How many cases of arthritis deformans and local palsies, of persistent headaches and other neuralgias, of spinal scle-

rosis, of heart murmurs from deposits, of bowel diseases and lung complaints, have we known to yield, partially or wholly, to a vigorous specific treatment! The taint may have been an ancestral legacy or a personal acquisition; but the prompt efficacy of the remedy has often been a miracle to the patient and a revelation to the physician. How many more miracles might have been wrought if we had oftener ventured to subject human testimony to the irreverent touchstone of therapeutics!

In cases where the parental syphilis has not manifested itself as the specific disease, its malign influence is often evident in the sickly offspring's enfeebled and fragile cells, which fall an easy prey to the virus of consumption.

III. Through what avenues do the bacilli of tubercle find lodgment in the lungs?

If tuberculosis is not a congenital disease, and tubercular consumption is always the product of a *contagium vivum*, introduced from without, this question is pertinent and its answer important.

The chief avenue through which the destructive microorganisms gain access to the lungs is doubtless the air we breathe. Infected saliva and sputa are swallowed. Do they produce intestinal tuberculosis? Do bacilli exist in the milk of a consumptive mother? If so, do they infect the nursing child through the digestive tract? I leave these questions for my colleague, Dr. Biggs, to answer.

It must always be difficult to determine, in any individual case, whether the infection came from the maternal breast or lungs. The flesh or milk of consumptive cows, used as food, may produce great disturbance, if not actual disease, especially in children.

The disastrous effect on infants of the "Pure Orange County Milk," obtained from stump-tailed cows, fed on distillery slops, in dark, filthy stables in New York, was brought to public notice and horror years ago by the indefatigable efforts of "Frank Leslie's Illustrated Newspaper."

But that this disgusting food produces tuberculosis directly has not been established. Its first effects are impaired digestion, impoverished blood, exhausted vitality. If these do not prove fatal, they at least break down the defences against the hordes of Lilliputian organisms, and facilitate their deadly assaults.

IV. What does observation prove regarding the likelihood of bacillary infection when there is no constitutional enfeeblement, either inherited or acquired?

Not many places in this world are exempt from pulmonary consumption. Bacilli are widely diffused. We all breathe them. Autopsies show that most lungs contain tubercles or their scars. Healthy people have but few of them. No harm comes to these people from this limited number. The normal resisting power of healthy lung substance is sufficient to overcome the attacks of these minute marauders.

Priceless is the legacy of a good constitution. Wise and wealthy is he who preserves it unimpaired. The microscopic cells of which he is composed are always panoplied against the innumerable microscopic enemies which assail him on every hand. A few of these enemies may find vulnerable points and do slight mischief, but their success is of short duration. There is little likelihood of wide-spread infection. Lacking suitable sustenance, meeting constant and vigorous resistance, the invaders fail to multiply, and soon die of starvation.

V. What are the principal surroundings, climate, occupations, habits, and diseases which impair cellular resistance, and so favor infection and development of consumption?

My colleague, Dr. Elsner, will furnish an enumeration with comments.

I call special attention to cigar-making. Stone-cutting, dry-grinding and polishing in machine-shops, milling, coal-heaving, etc., expose the delicate pulmonary tissues to an irritating dust which often does much harm. But the dust, as a rule, is a mechanical irritant, and not a chemical poison. And

in many factories strong currents of air blow the dust away, and masks of magnetised wire catch the fine particles of steel, and thus afford a partial protection. But cigar-making, as frequently if not usually conducted, has no redeeming features. The rooms are low and poorly ventilated, if ventilated at all. They are crowded with operatives, and filled with dust;—and such a dust! Not merely a mechanical irritant, but a poison as well, whose baneful effect stops not with the air vesicles, but extends to all parts of the system,—the stomache, the heart, the blood, the nerves, the brain. A cough, a lost appetite, dyspepsia, emaciation, palpitation, anæmia, nervousness, neuralgia, loss of mental grip and endurance,—these, with injurious personal habits, are the early outcome of the perilous occupation; and these prepare the way for the fatal bacilli.

The most devoted users of tobacco candidly confess that the habit is not specially neat and cleanly; that it is offensive to many men and most women; that it may do, and often actually does, harm; that it does not add vigor to health, nor length of days to life. And curiously enough, there is no claim as yet that it is a food.

If it were not for the pleasurable excitement and good fellowship, followed by a peaceful tranquillity, which it produces, resolute and persistent attempts would oftener be made to abandon its use. Perhaps the self-denying efforts of the philanthropic tobaccophilists would be more successful if they could appreciate fully the testimony of medical observation,—

> "It isn't tobacco alone men smoke,
> But human creatures' lives."

VI. Is the presence of tubercle bacilli in the sputa an indication that the existing lung disease was originally tuberculosis; and is their absence proof that the disease is not consumption? In other words, is there not satisfactory evidence that some cases of pulmonary consumption are non-tubercular at the start, becoming infected afterward; and that other cases remain free from tubercles throughout their course?

In a diagnostic point of view, the question is important. Severe bronchial and pulmonary lesions may be produced by exposure, diseases, habits, and occupations. This is especially true if constitutional enfeeblement exists. The symptoms manifested may resemble those of tubercular consumption. The lesions may prepare a suitable soil for the lodgment and growth of tubercle bacilli. These bacilli, which are ubiquitous, occupy the inviting premises. They multiply. If, at this time, examination of the sputa be made, the micro-organisms may be detected. This detection is held to authorise an unequivocal diagnosis of pulmonary tuberculosis.

The correctness of such a sweeping diagnosis may well be questioned. Serious disease of the breathing apparatus may, and often does, exist before the invasion of the bacilli. And careful dissections by competent observers have demonstrated that, in a large proportion of deaths from consumption, tubercles are entirely absent.

Conceding, as we must, that tuberculosis is caused exclusively by bacilli, their frequent presence in non-tubercular forms of phthisis has no diagnostic or ætiological significance. Neither does it justify a prediction that tuberculosis will ever certainly occur. Under proper treatment, or by tissue resistance, the bacilli may disappear without producing tubercles.

The bacillus tuberculosis is known to be a great criminal. But the hue and cry raised by the unequalled detective Koch, and echoed by scientists like Tyndal and by the whole force of keen-sighted pathologists, must not lead us to forget that there are other dangerous malefactors in the world.

In many varieties of lung disease, the micro-organisms are not the instigators, nor principals; they may be accidental and innocent bystanders; they are more likely to be willing accessories after the fact, and then chief partners in the wickedness. But there is no absurdity, as some have claimed, in the statement that consumption may originate without the bacilli, and that tubercles may be a supervention and a rapidly aggravating one. More than this, it is not difficult to believe that in all parts of the world—especially in those

where bacilli do not abound—pulmonary consumption may have its rise, progress, and fatal termination without the slightest assistance from the iniquitous parasites.

Lobular, interstitial, and even lobar, pneumonitis, abscesses, infarctions, nodules, may be followed by destructive ulcerations, cavities, and death. And yet in each case an indisputable *alibi* may be sustained for these pathogenic suspects.

VII. What precautions should be taken, and when, to prevent the invasion of tubercle bacilli? and what measures should be employed to fortify enfeebled cells against their attacks?

The off-hand answer to these questions is, Remove at once the newly born infant from a home where tubercular consumption is present; give it good food, pure air, proper clothing, abundant sunshine. Unfortunately, this course is usually impracticable. In many instances, where the expense is not an obstacle, the maternal instinct is stronger than any cold regard for the child's future welfare. The mother will not give up her baby. In other instances, where all the surroundings are unfavorable and unsanitary, the prolific parents are too poor to employ a suitable second nurse. And even if the affection of the mother and pinching poverty were not barriers to the permanent or prolonged removal of the dearly beloved offspring, it is often next to impossible to find a fit person willing to assume the duties and responsibilities of the mother.

Promising baby-farmers are numerous enough, but longevity seems not to be specially prominent among their vaunted benefactions to the little ones. Their crops are early gathered into the celestial garners. Where the choice is limited to the bacilli or the baby-farmer, we leave the infant with its mother.

Is the hope Utopian that, one of these days, people will learn that children are not born infiltrated with the seeds of consumption, which are certain to germinate; nor tainted with a malign tendency, from which there is no escape? and that enlightened charity will establish and endow numerous *crèches*,

or nurseries, where the infants of consumptive parents can be rescued from the infecting atmosphere at home, and have all the advantages which competent nursing, medical skill, and affectionate, motherly care can bestow? But while waiting for the advent of this "good time coming," we need not be idle. Important achievements are still practicable.

The active coöperation of the public is indispensable to success. But if our efforts, inspired not by doubt or half belief, but by thorough conviction, are earnest and zealous, this coöperation ought to be secured without difficulty. The people have a vital interest in the subject. They can be taught that tubercular consumption is communicated by contagion; that the contagious material consists of microscopic organisms; that these organisms abound, probably in the breath, certainly in the expectoration, of a consumptive person; that drying does not kill them; and that they are diffused through the air of apartments chiefly in the dust which is raised, by sweeping or othrewise, from dry, expectorated material. They can be taught, also, that to prevent contagion these bacilli must be killed. To do this, every particle expectorated by the consumptive must be destroyed while it is still moist. To allow it to become dry is to imperil precious lives. So expectoration must never be on floors, or carpets, or clothing. Large and small spittoons must contain disinfectants of known efficacy, and must be cleaned daily with boiling water. Little pieces of cloth or paper must be used in lieu of handkerchiefs, and at once thrown into the fire or into the disinfectants in the spittoons. By following this course strictly, the great mass of bacilli can be annihilated.

By proper—that is, constant and thorough—ventilation, those bacilli which have escaped destruction can be so blown away, and scattered into the out-door atmosphere, that they will do a minimum amount of mischief.

To guard against possible infection by breath or milk, the consumptive mother must not nurse her babe, nor permit it to sleep or remain in any room occupied by a consumptive member of the family.

A single case may show the importance of the early removal of an infant from an infectious locality, and also have some bearing on the claim that phthisis is not inherited.

Mrs. F., at her first confinement, was apparently so near death from confirmed consumption that her babe was given to a friend for adoption. Partial recovery took place after a time, and four more children were born. At length, the mother and the four children who remained at home all died of phthisis; while the daughter who was promptly and permanently removed to healthy surroundings, is still the possessor of unimpaired health.

To strengthen cells weak by inheritance or acquisition, so that they will be invincible by bacillary enemies, requires careful study of each case, and unremitting vigilance and perseverance.

The least smirch or suspicion of venereal virus must be removed. Bad habits must be broken. Injurious occupations must be abandoned. The best attainable hygienic influences must be secured. A change of climate may be important. Pure air, abundant sunshine, suitable raiment, are indispensable. Food and medicine adapted to the peculiarities of each case must be prescribed. One person may need bark and the martial preparations; another, oil and phosphorus; a third, mercury. Some may require arsenic, and many will derive benefit from strychnia.

VIII. How can the medical profession most widely diffuse and inculcate the important truth that consumption in children is often the result of parental faults and vices?

Unanimity of professional opinion is desirable, if not essential, to begin with. Zeal and discretion will be required.

The zeal needed will be founded on knowledge. The discretion which is to help will not be cowardice nor timidity. It will not be a conservatism which diligently uses its retrospective eyes, but never those placed in its forehead; which resolutely braces its feet, and refuses to budge, whether the procession runs over it, or leaves it in the rear.

If there be, in the medical profession, any over-zealous enthusiasts, not to say quixotic cranks; if there be any pes-

simistic and implacable croakers,—it is safe to promise that they will gladly submit to wholesome restraint on the one hand, and cheerfully suppress unhopeful predictions on the other, and engage harmoniously in any work designed to check the progress of evils which threaten the well-being, if not the very existence, of society.

Now what are the unquestioned facts which corroborate the statement that consumption in children is often the result of parental faults and vices? The parents of more than two thirds of all who die of consumption are themselves entirely free from the disease. They do not transmit what they do not possess. But many of these parents have faulty habits and practices. Among them are,—compressing the chest by dress, or by stooping while in the street, or school-room, or at work; breathing by day the foul odors of shops and factories and offices; sleeping at night in small, close bed-rooms, where the air is not only robbed of its oxygen, but is saturated with effete and poisonous emanations from the lungs; impairing digestion by eating and drinking at the wrong time, or in the wrong manner, or the wrong articles; breaking down the nervous system by worry, or too prolonged or severe mental work, and too little physical exercise; venereal excesses; too frequent child-bearing; permitting exhausting discharges to remain unchecked and uncared for.

Many of these parents have vices also. They gratify without restraint every appetite and passion; they contract and communicate diseases which poison the very fountains of life. These faults, these vices, seriously affect the integrity of the good constitution which the parents inherited, and which they are required, by common honesty and philanthropy, as well as by natural affection, to transmit unimpaired to their children. In some cases the inheritance is a life-long delicacy and want of vigor. And in many instances the only legacy which a child receives is a human form, a mass of enfeebled, mushroom cells, or diseased and nearly putrid ones. These cells insure a life of suffering to their innocent possessor. They have little resisting or recuperative power; they readily

succumb to insignificant exposures; they rally slowly from slight ailments; they cannot withstand the onslaught of the bacilli tuberculosis,—so that, nearly or remotely, consumption of some kind results.

Persistent iteration rarely fails to make an impression upon the public mind and conscience. By the living voice, the medical and sanitary journals, and in a guarded way by the public press, with the ready aid of the pulpit and the potent coöperation of woman, the medical profession can diffuse and inculcate the momentous truth specified in the question.

No optimistic delusion need be indulged that all indifference, selfishness, and sensuality can be eradicated by the most powerful appeals of tongue and pen. But if Burns could indulge a hope, benevolent but somewhat faint, that even auld Nickie-ben might reform,—

> "O wad ye tak a thought an' men'!
> Ye aiblins might—I dinna ken—"

may we not confidently expect that united and unequivocal medical testimony, and earnest entreaties and vigilant perseverance, will induce some affectionate and patriotic people to abandon courses whose distant but legitimate results are self-perpetuating miseries? And in a multitude of instances must not radical reform follow the alarming conviction that he who, by faults within his control, handicaps his child in the struggle for survival, or in the race for honorable success, is guilty of a great misdemeanor; while he who, by his vices, entails a life of disease and pain on his offspring is a monstrous criminal—a curse not only to his family, but to mankind? We should despair of humanity if we remembered that "the evil which men do lives after them," and forgot that the good has a ten-fold longer lease of influence.

IX. What therapeutical benefit has been derived from the discovery of the bacillus tuberculosis?

The relation of the bacillus to the ætiology, diagnosis, and prophylaxis of tubercular phthisis has already been consid-

ered. Years ago the opinion was entertained that consumption is not hereditary. Koch's discovery has aided in confirming this opinion.

Formerly, tubercles were thought to originate invariably from some unknown element in caseous material. This element has been shown to be microscopic organisms. The presence of bacilli in sputa is still believed by many pathologists to be pathognomonic of tubercular phthisis. We have seen that there is reason to question this belief.

In preventing tubercular consumption, the knowledge that this disease arises from infection may, and should, prove of immense benefit.

Killing the bacilli or preventing their access to the lungs, and fortifying impotent cells against their attacks, comprise at present our chief, if not sole, prophylactic resources. Unfortunately, no practical method of destroying the bacilli which have colonised in the lungs—and at the same time saving the life of the patient—has received extensive professional endorsement. What the future may have in store, no one will have the temerity to conjecture or deny. But that the treatment of every form of consumption remains as it was before the discovery of the bacillus is the sad confession which every enthusiastic admirer of Koch, as well as every practical physician, must reluctantly make.

I must no longer forget that my remarks were expected to be introductory only. The question relating to treatment, tempting as it is, I leave, without comment, to my able and experienced colleague.

Sincerely thanking my auditors for their patience and attention, I yield the floor to the competent and obliging Fellows who have kindly consented to engage in this discussion.

QUESTION I.

IN ADDITION TO A FEEBLE VITALITY, WHICH MAY BE DERIVED FROM PARENTS WHO ARE OR ARE NOT CONSUMPTIVE, DO THE CHILDREN OF CONSUMPTIVE PARENTS INHERIT TUBERCULOSIS ITSELF, OR ANY SPECIAL PHTHISICAL TAINT OR TENDENCY?

QUESTION II.

WHAT ARE THE CHIEF HABITS, PECULIARITIES, AND DISEASES, OTHER THAN CONSUMPTION, WHICH IMPAIR THE CONSTITUTION TRANSMITTED TO CHILDREN, AND FACILITATE TUBERCULAR INFECTION?

Discussed by Dr. JOHN CRONYN, of Erie County.

Recognising the fearful mortality among the human race produced by the subject under discussion—Tuberculosis—and the great zeal of the author of this discussion, who requested that I should contribute something to the stock of information to be sought, I consented; but, looking at the same time over the vast field allotted to me, had to decide between a very long paper that would require more time than I was afforded, or a very short one that would be suggestive and inspire investigation. I have chosen the latter, and promise to furnish you material for reflection until we meet again.

For at the very threshold of the inquiry, "Do the children of consumptive parents inherit Tuberculosis itself?" occurs the other question, What is Heredity? and how transmit-

ted? To assert, as many authorities have,—or to suppose, as many more have,—that with the primordial life-cell from the parent is conveyed the materies morbi for future development, is, to say the least of it, surrounded by many doubts. Nor does the analogy produced by syphilis hold good, in either a practical or a theoretical sense. Indeed, it seems to me too easy a method of accounting for the many diseases of so-called inheritance. It can scarcely be considered possible that this microscopic body, this bioplasmic entity, can in itself contain the germ for the transmission of future disease. If such were the case, or such a necessity, what becomes of atavism?[1] And yet from what other source can this dire "inheritance" spring? Scientific inquiry has contributed but little to the elucidation of this subject. It seems to have satisfied itself with collecting evidence of remarkable instances of hereditary action in health and disease, educing from them a general law, which, being so extensive in experience and observation, has received the sanction of certitude. I would like to extend the consideration of this subject, but that I must to my theme: "Do the children of consumptive parents inherit tuberculosis itself? *i. e.*, Are they born with incipient or partly developed phthisis? I think not, notwithstanding that the children of such parents too often die of the disease before they are 26; but the instances are very few, and those of doubtful record, where children soon after birth have died of tuberculosis.

The presence of any "special taint or tendency" implies, of course, the same condition or power of transmission (in a modified form or semi-neutralised state) that would obtain in the child truly inheriting tuberculosis. If ever the true source of heredity be discovered, it will be found to depend largely upon that imitative disposition of nature which reproduces its like, whether in health or in disease. How otherwise account for the color of the hair, features, etc.; abnormalities, as talipes, moles, and marks of various kinds? These cannot for a moment be supposed to exist in the pri-

[1] A remarkable example of atavistic inheritance was here mentioned.

mordial life-cell, still they occur in utero or develop after birth.

Now, if in all honesty we are obliged to confess how little we know of how it all happens, let us say that hereditary tuberculosis does not mean actual presence of the disease at birth, but a certain organic constitution, which, under favorable circumstances, is prone to undergo pathological development in the course of life, and presents that constitutional predisposition, tendency, or susceptibility to the disease.

Under the second question may be considered the scrofulous or strumous habit, upon which many authorities base the development of tuberculosis, and without which as a constitutional state many more think it cannot occur. The syphilitic, producing a dyscrasia of its own, undoubtedly tends to enfeeble and impair the constitution. The physical form, temperament, and general habits, as of intemperance, or excesses of any kind, which surely have their enfeebling characteristics, as well as certain trades and occupations, also merit inquiry.

I have now presented to you the soil upon which Dr. Biggs will sow broadcast the tubercle bacillus. Dr. Elsner will insist upon the necessity of its active cultivation to the production of the disease; but Dr. Shrady will interpose with the long-sought-for panacea that will reduce to a minimum the most fearful scourge of the human family.

QUESTION III.

THROUGH WHAT AVENUES DO THE BACILLI OF TUBERCLE FIND LODGMENT IN THE LUNGS?

QUESTION IV.

WHAT DOES OBSERVATION PROVE REGARDING THE LIKELIHOOD OF BACILLARY INFECTION WHEN THERE IS NO CONSTITUTIONAL ENFEEBLEMENT, EITHER INHERITED OR ACQUIRED?

Discussed by Dr. Hermann M. Biggs, of New York County.

With the acceptance of a belief in the specific nature of the tubercle bacillus, one of the most important questions that presents itself for discussion, as regards the ætiology and prevention of tuberculosis, is "Through what avenues do the bacilli of tubercle find lodgment in the lungs?" This question at the present time can be answered in large part by reference to the results obtained from experimental investigations taken in connection with the pathological observations in this disease. All of the avenues by which tubercle bacilli enter the human body, and at different points produce centres of local tuberculosis, may be indirectly the avenues by which the bacilli find lodgment in the lungs; for from any one of these points of infection there may be produced a secondary pulmonary disease. It was first shown by the experiments of Koch that the inoculation of animals in various situations with cultures of the tubercle bacillus produced either a general miliary tuberculosis, or a local tubercular process, which afterwards either disseminated itself through the body by means of the circulation, or extended through the medium of the lymphatic system to other tissues. In the same way it

has been repeatedly shown that tubercular products, such as sputum or cheesy tubercular masses, suspended in an indifferent fluid, may be substituted for the cultures of the tubercle bacilli, and the same results be obtained.

These methods of extension, *i. e.*, by means of the blood or lymph currents, are the same, whether the point of local infection is situated externally, as in cases of inoculation of animals; or whether it is situated internally in the human being, as in cases of renal tuberculosis, caries of the spine, fungoid arthritis, or tubercular degeneration of the lymph glands. But farther than this, a few cases of tuberculosis have been recorded where the disease resulted directly from the accidental subcutaneous inoculation of human beings with tubercular matter, as, for example: A case recorded by Tscherining, in 1884, where a female attendant upon a case of phthisis cut her finger with a broken cup containing the patient's sputum, and later developed tubercular inflammation at the wounded point, which extended up the lymphatics of the arm, and implicated finally the axillary lymph glands. Under such circumstances the production of pulmonary tuberculosis, with or without general miliary tuberculosis, in the majority of cases would be only a question of time.

The most common avenue of entrance of the tubercle bacilli to the lungs, as has been clearly shown, both clinically and experimentally, is through the air inspired. Tappeinier first suggested the possibility of the transmission of phthisis by the inhalation of phthisical sputum scattered in the air by coughing. He made experiments upon dogs at the Munich Pathological Institute, which fully confirmed this view. Comparatively small quantities of phthisical sputum were sufficient to produce tuberculosis in various forms in perfectly healthy dogs. Tubercle bacilli retain their vitality in dried sputum for long periods of time, and it has been proven repeatedly that tuberculosis may be produced in animals by impregnating the air which they breathe with this dried and pulverised sputum. So, too, the mixture of phthisical sputum with water, and the administration to animals by inhalation through the

use of an atomizer, produced invariably tuberculosis. No more conclusive proof could be desired than is afforded by these experiments, of the possibility of the transmission of tuberculosis in the human being through the contamination by tubercle bacilli of the inspired air. If dogs, which quite rarely die of spontaneous tuberculosis, so rapidly succumb to infection in this manner, how much more liable to infection are the far more susceptible lungs of the human subject? It may be argued that the quantity of the virus contained in the inspired air must invariably be much less under natural conditions than in such experiments, no matter how close the contact with tubercular patients; but in susceptible persons the duration of the exposure far more than counterbalances this difference. All persons familiar with autopsy work have remarked the frequency with which old, cheesy, calcareous, or fibroid masses, the remains of a former local tubercular process, are found in the lungs of subjects, otherwise free from tubercular lesions. These observations show how much more frequent than is ordinarily supposed are the instances of localised pulmonary tuberculosis due to the inhalation of tubercle bacilli.

Again: Tuberculosis with primary or secondary implication of the lungs can be readily produced by feeding animals with tubercular sputum, and in a few instances it has followed the ingestion of the tissues of tubercular animals, and the milk from tubercular cows. Similar instances have been recorded of the development of phthisis in the human being after the ingestion of tubercular matter. As a rule, the milk from tubercular cows only contains tubercle bacilli when the udders are affected; however, this apparently is not invariably the case. It is probable that tuberculosis in the human being may sometimes be produced by the milk from diseased animals. The tubercular ulceration in the intestines, which occurs so frequently in children in connection with tuberculosis of the lungs, is supposed to be caused by swallowing the tubercular sputum. In some cases we find that the pulmonary affection is slight and recent, or quite absent; probably

in these cases the disease has resulted from milk or food containing tubercle bacilli, and the pulmonary affection is secondary to the intestinal disease.

Those cases of pulmonary tuberculosis which follow or accompany the rare instances of primary genito-urinary tuberculosis, resulting perhaps from infection of the genital organs during coitus, are to be included with the other cases of the pulmonary affection, which are produced by infection, through the blood or lymphatic system, from a local tuberculosis of some other organ or tissue.

It is at least possible that many of those cases of tuberculosis in the bones, joints, lymphatic glands, etc., have resulted from the introduction of the bacilli into the lungs through the inspired air, their entrance into the blood or lymphatic current of the lungs without the production of a local pulmonary tuberculosis, and their deposition and development in some tissue rendered susceptible to their action by traumatism, previous disease, or impaired vitality. Having obtained a lodgment in this manner, they may again later make their way into the circulation, and finding now a favorable soil and lodgment in the lungs, produce secondarily a pulmonary tuberculosis. This, of course, does not constitute a new avenue of admission to the lungs, but explains how in some cases primary tuberculosis of other organs may be perhaps produced by the entrance of the bacilli through the inspired air, and the secondary production of the pulmonary affection. It has seemed to me possible also that when the bacilli are taken into the intestinal canal with milk or food, they may pass into the lymphatics from the intestines, and, thus becoming disseminated, produce a local tuberculosis in the lungs, or in some other organ or tissue, which offers at the time a favorable soil for their development.

"What does observation prove regarding the likelihood of bacillary infection when there is no constitutional enfeeblement, either inherited or acquired?"

There can be no reasonable doubt, I think, that clinical observation shows that there is comparatively little likelihood

of bacillary infection when there is no constitutional enfeeblement, either inherited or acquired, unless there is a long continued and close exposure to infection; but under these conditions cases of infection do occur.

Many physicians of large experience, previous to the discovery of the tubercle bacillus, believed that it was possible that individuals possessing no predisposition or hereditary tendency to pulmonary tuberculosis might yet acquire it, as the result of exposure, and sooner or later succumb to the disease; and the discovery of the tubercle bacilli, and the proof of the possibility of the transmission of tuberculosis by the inhalation of phthisical sputum, afford strong confirmatory proof of this fact. Many instances can be adduced to show that perfectly healthy persons from healthy families, by long attendance upon phthisical patients, have themselves become phthisical, and died. Of course it is impossible to bring forward in any case absolute proof of the production of the disease by this exposure, for the disbelievers in this theory would show that in perhaps an equal number of perfectly healthy persons from healthy families, who were not wittingly exposed to infection, phthisis does develop. The difficulties are almost insurmountable in the way of absolutely proving in any previously healthy person that the development of tuberculosis has resulted from exposure to infection at a given time. These difficulties arise especially from the frequency of the disease and the consequent almost constant exposure to it, the insidious nature of phthisis in its inception, and the impossibility of showing the absence of an hereditary or acquired susceptibility, or even the absence of incipient phthisis in any person prior to the time of a constant and protracted exposure to tubercular infection, at which time phthisis might be presumed to have been contracted. The question of the develment of the disease under such conditions is chiefly one of observation and opinion, and not one susceptible of proof. The possibility of such infection, however, cannot be denied when once it has been shown that the tubercle bacillus is the cause of phthisis; that the bacilli are present in the breath of

phthisical patients and in the air of hospital wards containing cases of tuberculosis; and that the disease can be produced in animals by the inhalation of dried sputum or cultures of the bacilli. Notwithstanding this, however, an exceeding close and prolonged exposure, such as occurs between wife and husband, one of whom is phthisical, seems to be usually requisite for the transmission of the disease to healthy persons. The most ardent believers in the infectious and contagious nature of phthisis (and I class myself with these) cannot but admit the truth of this proposition, for the evidence in its favor is very great. The history for many years of the hospital for pulmonary diseases in London shows that no larger proportion of the attendants develop phthisis than do those in other employments. M. Leudet, of the Hotel Dieu in Rouen, after an exhaustive analysis of the cases admitted to that hospital for twenty years, and of their histories afterward, concludes that the propagation of pulmonary tuberculosis in hospitals cannot be proven. Notwithstanding all this, however, the Conseil d'Hygiène et de Salubrité, of France, at their last meeting, agreed on the following decision: "As the sputum of tubercular patients contains the most active agent of transmission of tuberculosis, it ought not to be thrown on the ground or floor, nor allowed to cling to clothing or linen. Phthisical patients should use spittoons filled with sawdust, and these should be washed daily with boiling water, and the sawdust should be burned. In schools, workshops, barracks, hospitals, etc., these rules should be rigidly carried out. Rooms occupied by phthisical patients should be thoroughly disinfected after they have been vacated, and especially so if the patients have died of this disease. Clothing, linen, etc., should be boiled for several hours, or soaked in a disinfecting solution before being again used."

The question of the development of tuberculosis after exposure to tubercular infection resolves itself finally into simply a question of the ratio between the intensity and duration of the exposure, and the susceptibility of the individual to the disease at the time of exposure. Certain conditions or pecul-

iarities of constitution, the cause and the nature of which we do not know, render some persons far more susceptible than others to the poison of the various infectious and contagious diseases, and especially to phthisis. This susceptibility is hereditary in many families, and not only differs in different persons, but varies in the same person at different times. We not only do not know the nature or cause of this susceptibility, but we cannot accurately gauge or determine its degree or existence in many persons. Prudence, therefore, dictates that the greatest precautions should be observed under all conditions to limit and prevent as far as possible the exposure of healthy persons to tubercular infection. The following proposition has been experimentally proven by Watson Cheyne in regard to many of the organisms of the acute infectious diseases, namely,—"That the pathogenic dose of a virus varies inversely with the predisposition of the animal to the disease in question," and I believe that it holds equally good in regard to at least one of the chronic infectious diseases, *i. e.*, phthisis. Then the question of bacillary infection under all conditions will become simply one of the ratio of intensity of exposure to susceptibility; and we may conclude theoretically that, with a sufficient intensity and prolongation of exposure to tubercular infection, every person would eventually develop phthisis, but that, under natural conditions, the intensity of exposure required to overcome the insusceptibility of many persons is never reached.

QUESTION V.

WHAT ARE THE PRINCIPAL SURROUNDINGS, CLIMATE, OCCUPATIONS, HABITS, AND DISEASES WHICH IMPAIR CELLULAR RESISTANCE, AND SO FAVOR INFECTION AND DEVELOPMENT OF CONSUMPTION ?

QUESTION VI.

IS THE PRESENCE OF TUBERCLE BACILLI IN THE SPUTA AN INDICATION THAT THE EXISTING LUNG DISEASE WAS ORIGINALLY TUBERCULOSIS; AND IS THEIR ABSENCE PROOF THAT THE DISEASE IS NOT CONSUMPTION? IN OTHER WORDS, IS THERE NOT SATISFACTORY EVIDENCE THAT SOME CASES OF PULMONARY CONSUMPTION ARE NON-TUBERCULAR AT THE START, BECOMING INFECTED AFTERWARD; AND THAT OTHER CASES REMAIN FREE FROM TUBERCLES THROUGHOUT THEIR COURSE?

Discussed by Dr. HENRY L. ELSNER, of Onondaga County.

I shall first attempt to bring to your notice ætiological factors that predispose to phthisis pulmonalis. The question is, What are the principal surroundings, climate, occupations, habits, and diseases which impair cellular resistance, and so favor infection and development of consumption?

SURROUNDINGS. The very fact that tuberculous disease most frequently invades the lungs, added to the discovery of its infectious character, tends to prove that the virus finds its entrance into these organs by means of the air we breathe. Cohnheim ("Die Tuberculose von Staudpunkte der Infections-

lehre," p. 664), before the discovery of the bacilli of tuberculosis (which he at that time foresaw), tells us that "in the major number of cases the tubercular virus finds entrance into the organism with the inspired air." This conclusion is strengthened by the frequency with which the pleura, bronchial, and tracheal lymphatics are involved in the earlier stage of pulmonary disease. Impure, vitiated, and germ-laden air is one of the most important factors in the production of phthisis pulmonalis. It is even held by some that caseous pneumonia is caused by infected air. The defective ventilation of our dwellings, and the continuous breathing of air rendered impure by overcrowding, are potent factors in the causation of consumption. It must be remembered that, as a rule, overcrowding and improper ventilation accompany each other. Simon ("Third Report of the Medical Officer of the Privy Council," 1858) concluded, "In proportion as the male and female populations are severally attracted to indoor branches of industry, in such proportion, other things being equal, their respective death rates from lung disease increased." Of one thousand cases treated in the London Hospital for consumption (Smith, "Medical Times and Gazette," April, 1862), seventy per cent. worked continuously in overcrowded, hot, and dusty apartments. Welsh ("Nature and Varieties of Destructive Lung Disease") says,—"Nearly half of army consumption is connected with vitiated barrack atmosphere." I could give voluminous statistics to show how murderously phthisis rages in prisons and seminaries.[1] Crowded cities, closely packed tenements, poorly ventilated homes, habitations from which the sunlight is excluded, all tend to lower cellular resistance, and predispose phthisis. It is a recognised fact that tuberculosis is frequently diagnosed in its

[1] Fourcault, "Causes Génér des Maladies Chroniques," etc., Paris, 1844.
British Army Reports, 1853. Tullock Maclean.
Ewart, "Brit. Med. Journal," May, 1881, p. 809.
Champouillon, "Gaz. des Hopit.," 1857, p. 127.
Thollozair, "Gaz. Med. de Paris," 1859.
Viry, "Journ. de Med. de Bordeaux," July, 1870, p. 295.
Lausiés, "De la Phthisie dans l'armée." Hirsch, "Historisch-Geogr. Pathol.," 1886, p. 153.

incipiency, to be remedied and arrested by a removal from these baneful influences to quarters where abundant fresh air and sunshine can be enjoyed. The ætiology of phthisis, therefore, teaches a valuable lesson, which is, that in order to increase cellular resistance, to make the patient less likely to suffer from the ravages of the bacilli, we must give abundant supply of fresh air and sunshine.

The lamented Fagge, in his monumental work, says,— "Food, insufficient in quantity and bad in quality, is believed to be among the conditions which tend to produce phthisis; but I am not aware of any positive proof of this, such as would be afforded by cases in which it could be shown to be the principal cause of the disease." In my opinion, there can be no doubt that insufficient food, a continuously bad diet, added to other depressing factors, or to a proclivity to tuberculosis, is sufficient to lower the resisting power of the patient, and make him prone to phthisis. Hutchinson, in his "Pedigree of Disease," p. 64, speaks of a deficiency of fatty matters, such as butter, oil, and various other forms of animal and vegetable fat, which is influential in causing scrofula. Factors which give rise to scrofulous disease must necessarily increase the tendencies to tuberculosis, for we have now learned to speak of scrofulosis and tuberculosis as almost synonymous. Laborers who work in close rooms, receiving wages which allow an abundant supply of wholesome food, are more likely to develop phthisis than those who work in the open air for small wages, with a poor diet. It is evident, therefore, that bad air has more influence in the development of consumption than bad food; but improper food diminishes the resisting powers by causing anæmia, inanition, chronic, gastric, and intestinal catarrh. In the light of recent discovery, we would unhesitatingly assert that it is highly improper for a tuberculous mother to nurse her offspring. She not only depletes herself by nursing her babe, but she is giving nourishment which cannot be equal to the standard of normal human milk, at the same time increasing the chances of conveying the disease by continuous close contact with her child.

A question that has for some years interested the medical profession, and one that should at least receive mention here, is this: "Can tuberculosis be excited in man by the milk or meat of animals suffering from perlsucht or bovine tuberculosis?" The milk of cows with pearl disease has been known to induce tuberculosis not only in calves, but also in other animals, and even guinea pigs. (Gerlach & Klebs.) Though Koch believes to have demonstrated that perlsucht and human tuberculosis are identical, yet this conclusion is not accepted by all pathologists or bacteriologists. Law ("National Board of Health Bulletin," No. 40, 1882) says that we have no satisfactory evidence that tuberculosis has ever been conveyed by bovine lymph. A commission, composed of Haubner, Birch, Hirschfeld, and Siedangrotzky, investigated this question, concluding that they had no positive proof that would justify them in asserting that the use of milk or meat from animals with perlsucht would convey tubercular consumption to man. In the International Veterinary Congress (quoted from Virchow and Hirsch's Jahresbericht, 1884, Vol. I, p. 591) the following resolution was adopted: "Whereas, tuberculosis can be produced experimentally by introduction of tubercular virus into the alimentary canal and by inoculation, this congress declares that all meats of tubercular animals are to be excluded from man, regardless of their appearance. The milk of all animals affected, or supposed to be affected, with tuberculosis is not to be used, either by man or beast. The milk of animals supposed to be exposed to bovine tuberculosis is only to be used by man after boiling." Dr. Mason, in a report addressed to the town council of Hull (London "Lancet," Oct. 3, 1885), having studied the subject practically, concluded that bovine tuberculosis is an infectious disease, can be transmitted by the ingestion and inoculation of tuberculous matter, and by giving animals the flesh and milk of a tuberculous beast. He asserted that the disease is transmissible to the human species through milk and flesh, should these articles be uncooked or insufficiently cooked.

Hanford (London "Lancet," Dec. 5, 1885) says,—"The

milk of tuberculous cows may in some cases reproduce the disease when consumed. Experiments on this point have given widely different results. The real state of the case probably is that the milk only contains tubercle bacilli when the udder is affected with tuberculous disease, which only happens exceptionally; and that the milk even of tuberculous cows does not reproduce the disease unless it contains tubercle bacilli." He decides that the meat is only dangerous if the bacilli are in the spore-bearing condition; for the bacilli themselves are killed by the gastric juice, though the spores pass through the stomach unharmed. In the majority of cases they pass out of the healthy alimentary canal before they effect a lodgment, owing to the long developmental stage. The question of transmission of tuberculosis from beast to man is still *sub judice;* even Virchow, after years of labor, declaring that "the transmission of the bovine disease could not as yet be proved."

Occupation and Habits. It may be said, in discussing the effect of occupation and habits upon the production of phthisis pulmonalis, that the disease is more readily transmitted to persons engaged in occupations which are sedentary, and which are carried on in-doors. It has long since been observed and remarked, "that the naked savage, whatever ills he may have to bear, rarely finds phthisis among them, but with every addition to his clothing and to the comfort of his tree or cave, his proneness to it increases." (Andrews, "British Medical Journal," April, 1884, p. 707.) In the higher classes of patients, a sedentary life operates as the principal cause of its greater frequency among females. (Clark, "Treatise on Pulmonary Consumption," 1835, p. 201.) Dr. Guy (Fagge's "Practice of Medicine," p. 993), in 1884, reported, after most elaborate investigation before a commission of inquiry, that the disease was more fatal to tradesmen than to gentlemen, more fatal to artisans than to tradesmen. Even hawkers, standing about in the streets, and exposed to all inclemencies of weather, had the advantage over men employed in workshops. Among printers he instituted a very

close comparison as to the frequency of lung disease, and found, by actual count, that in those who had the greatest amount of air space in the work-rooms there was the smallest number of consumptives and catarrhal diseases. The number increased in direct proportion as the air-space diminished. Other chief causes which favor the development of phthisis are found in workmen in fine dust of any kind, of carbonic or other noxious gases, those exposed to great vicissitudes of temperature, inhaling hot air, either very dry or very moist, working in a cramped posture, and thus interfering with free respiratory action. The excess of phthisis in this class of workmen cannot be attributed to contagion or infection. Many of these cases simulate the bacillary disease, but are of an inflammatory character at first; later have tuberculosis superadded, while some are cases of fibroid phthisis—more properly called chronic interstitial pneumonia. Among the foreign substances that gain entrance into the air cells and lung tissue, to act as factors in causing the disease, we have carbon, oxide of iron, quartz, sandstone or clay, cotton, and flax. Whether the siderosis of Zenker is truly a phthisical disease is a question which we have not the time to discuss. In those predisposed to phthisis, the habit of tight lacing, a faulty carriage of the body, or any occupation which interferes with free and full expansion, act as predisposing causes, and may be potent agents in hastening the development of the disease. The excessive use of alcoholic liquors has long since been known to hasten the onset of the disease. Bell ("American Journal Med. Sciences," October, 1859) asserts,—"It seems almost conclusive that the use of alcohol not only has no power to defend those predisposed to phthisis from its attacks, but would, with little doubt, change the predisposition into active disease."

The question of climate will now claim our attention.

The careful investigations of Hirsch ("Historisch. Geograph. Pathologie," 1886) prove conclusively that neither geographical position, nor temperature of a region, has any influence upon the prevalence of phthisis. He holds that

there are parts of all zones that are free from the disease, but there is no zone in which the disease is not found. "The disease exists in all climates, tropical, temperate, and arctic: apparent exceptions to this serve only to bring into stronger relief the much greater importance of local than of general influences. According to the common statement, it is more prevalent in the tropics; and, as far as absolute number of cases is concerned, this is no doubt true, for the population is many times more dense there than in the north. Whether it is relatively more frequent is a very different question, the final answer to which will require vast statistics, yet to be compiled, the labor and the record of many generations." (Andrews, London "Lancet," Vol. I, 1884.) In 1862, Dr. Bowditch, of Boston, in an address before the Massachusetts Medical Society, brought forward a mass of evidence which led him to believe that, in that State, consumption, instead of being equally diffused through all parts of it, prevails especially in such places as are situated upon a damp soil, and seldom occurs when the soil is dry. Dr. Buchanan's conclusions corroborate these views. Hirsch (*loc. cit.*, p. 136) teaches that no more than a high temperature, does a sudden variation of temperature, in itself, influence the production of consumption. An elevated position may be said to exercise a great influence in the disease, just as soil dampness may be a factor in its development in those predisposed.

What diseases produce phthisis by impairing cellular resistance? Broadly it may be said, all diseases which in any way affect the development of the body in the child, and affect its nutrition in the adult. There are a score of diseases which are dependent upon faulty feeding or improper hygiene during early life, each one of which lowers the resisting powers, and leaves indelible marks upon these unfortunate creatures. It is not within my province to go into detail. We will not discuss the relation of scrofulosis to phthisis, for advanced pathologists speak of it as tuberculous also.

Syphilitic patients frequently succumb to a rapidly destructive tuberculosis. Many of these patients are addicted to

sexual excesses, dissipate, indulge in the free and immoderate use of alcoholic liquors—all factors which hasten the onset of the disease.

A large number of diabetic patients die of consumption—a fact that has been noticed by most medical writers. Frerich ("Uber den Diabetes," p. 78) says,—"Diseases of the lung are the more important forms of disease which are brought about by diabetes, and in this way nearly one half of all diabetics make their exit from the world." The form of consumption from which they suffer is attended with the usual changes which characterize the disease, including the tubercle bacilli.

It was held by several writers, including Wells, Schoenlein, and Boudin ("Transact. of the Society for Improvement of Med. and Chir. Knowledge," III, 417, and "Annal. d'Hyg.") that malarious diseases antagonize the virus of phthisis. For some time this doctrine was entertained, but Hirsch ("Geog. Path.") with his usual care investigated the question, and found that there was no antagonism, and that phthisis was as readily transmitted in malarious as in any other regions. This conclusion, I think, will meet the experience of all who practice in regions where malarious diseases are prevalent.

It has seemed to some that carcinoma antagonized phthisis. This has not been proven, however. Traube never found a case of consumption in a patient with mitral stenosis, and it seems to be conceded by most medical writers that this form of heart trouble is an almost complete bar to phthisis. Other valvular lesions are often associated with consumption. Emphysematous and asthmatic patients seem to enjoy immunity. Tuberculous disease frequently takes its start after measles and whooping-cough. It is probable that in these cases there existed a latent tuberculosis which was awaiting a factor to kindle it. Pregnancy and childbirth seem to be factors in the production of phthisis. In the major portion of cases these conditions aid in debilitating those in whom the germs of the disease are awaiting some agent to lead them from their resting-place. We no longer believe that primary hæmoptysis can

give rise to phthisis. Pleurisy is still regarded by some as a cause of phthisis. In looking over my records, I am amazed at the large number of pleurisies that ultimately proved tubercular, and heartily second the conclusions of Friedländer, in Volkmann's "Sammlung Klinischer Vortrage," when he says that the larger number of pleurisies are secondary and of tuberculous origin. Statistics strengthen this conclusion. The relations which bronchitis, the different forms of pneumonia, and other inflammatory diseases bear to the causation of phthisis, we will answer in discussing the second question.

"Is the presence of tubercle bacilli in the sputa an indication that the existing lung disease was originally tuberculosis? and is their absence proof that the disease is not consumption? In other words, Is there not satisfactory evidence that some cases of pulmonary consumption are non-tubercular at the start, becoming infected afterward, and that other cases remain free from tubercles throughout their course?" This brings us really to the discussion of the theory of phthisis. Since the discovery of Koch, most pathologists have been inclined to return to the unity theory of phthisis, and consider the disease in all cases tuberculous. It may be said at this point that I firmly believe that there can be no true pulmonary tuberculosis without the bacilli of tuberculosis, and that much the larger number of cases of consumption are tubercular; but the results of careful clinical study have convinced me that there are occasional and rare cases of phthisis which run their course to a fatal termination without the presence of tubercles. There can be no doubt that there are diseases which may be called antecedent. In cases where we find abundant bacilli, we cannot with certainty say or prove that the original lung disease was tubercular. It is a fact upon which Mr. Cheyne lays stress, that the habitat of the bacillus is the alveolar epithelium and the products of its proliferation, *i. e.*, the single-nucleated and the multi-nucleated or giant cells. There must be this fitting soil. Williams ("Lancet," Aug. 4, 1883) concludes that the bacilli frequently enter

the respiratory organs, and even the alveoli, and do not give rise to phthisis, which can only be explained on the ground that the epithelium is unfit for their reception and growth. If we accept the bacillus theory at all, we must allow that the well known predisposing causes of phthisis bring about low inflammatory conditions which tend to cellular products, or weaken the resisting powers of the constitution. This fact at once proves that though we do have the presence of the bacillus, yet the antecedent disease which prepared the home for the bacillus was not tubercular. Koch even holds that the nesting of the bacilli is favored by defects in the epithelium of the respiratory passages, accumulation of secretion in the bronchi, and faulty respiratory action. Westbrook ("New York Medical Journal," July 26, 1884) agrees that the bacilli are the cause of phthisis, but that there must be certain antecedent conditions. He speaks of such abnormalities which give rise to accumulation of secretion in the bronchi and apices, anatomical abnormalities, faulty nutrition, and acquired diseases of the lung, which lead to cheesy formations or pus accumulations, like bronchitis, chronic peribronchitis, desquamative pneumonia, and acute pneumonia, in which the inflammatory products are not absorbed. It is these cases which frequently pave the way to bacillary invasion in those predisposed to the disease, and in others with enfeebled resisting powers; for everything about and within the patient invites the bacilli to a home where they can proliferate at will, and find abundant food.

While we are well acquainted with the immense literature that has been created since Koch's epoch-producing discovery, and while the bacillary theory of consumption is daily gaining ground, we are neglecting the study of conditions which favor the development of the bacillus by making a resting-place for it. I wish to say a few words to prove that all cases of tuberculosis are not at first tubercular, and that some cases of phthisis run a course parallel with tuberculosis, yet die without tuberculisation. It cannot be denied that clinical experience frequently brings to our notice cases

in which there are well defined symptoms of apical and basic catarrhal pneumonia, where expert microscopists fail to detect the presence of the bacilli for a long time, even after disorganisation and abundant expectoration take place (a time when we would certainly expect the bacilli). The picture changes;—the temperature becomes elevated; disorganisation is more rapid, more pronounced; symptoms of tuberculosis manifest themselves,—and we have now the bacilli in abundance. Here, then, is a picture which leads us to conclude that we had at first a catarrhal non-tubercular pneumonia, which prepared a soil for the proliferation of bacilli and consequent tuberculosis. I am not alone in formulating this conclusion, for Green and Baer found many cases of acute pneumonia and pleurisy in prisons: failing to mend, the patients finally died of tuberculosis. They tell us that the remnants of the disease undergo a tubercular change. Hirsch (l. c. 160) says,—"I leave undecided the question (that has already been decided by some) whether the phthisical patient first becomes tubercular; but it appears certain to me that the disposition must be found in abnormal conditions of the respiratory organs, either congenital, or caused by external influences, direct or indirect, bearing upon these organs." Among the direct influences he places the poor surroundings and improper hygiene already mentioned; and among other causes he places chronic bronchitis, unresolved pneumonia, more particularly of a catarrhal type. Dr. Green, in a recent discussion before the Royal Medical and Chirurgical Society, spoke as follows: "Are we familiar with apex consolidations which are non-tubercular? In some cases of disease of one apex, where there was no evidence of softening or disintegration, it is difficult to say whether they are tubercular or not. If they are simple, are they specially liable to become tubercular? Can we accurately speak of a pretubercular stage of phthisis?" He confessed that almost insuperable difficulties seemed to surround an answer to these questions. Many who have become converts to the well known theory of Niemeyer are slow to yield, for it seems to them that there

are occasional cases of pulmonary disease which pass to a fatal termination without the admixture of tubercle bacilli. Recently Percy Kidd ("Lancet," Oct. 2, 1886) reported, under the head of "Basic Tuberculous Phthisis," two cases of the disease in which the bacilli were present; two cases of basic non-tuberculous disease, in which there were no bacilli; and finally three cases in which the disease was at first non-tuberculous, afterward becoming tuberculous, as shown by the presence of bacilli.

In conclusion, it appears to me that it would be well if we waited before accepting all that the bacillary theory implies, for some cases are not yet explained by it, however strong the evidence may be in its favor. Lichtenstern speaks truthfully ("Correspondenz bl. der aerztl. Vereine in Rheinland," April, 1883, No. 31) when he says,—"In spite of the brilliant discovery of Koch, many gaps and open questions regarding the ætiology of phthisis stare us in the face, which point to a wide field of common labor for the physician, statistician, pathologist, and bacteriologist. This new theory will not be firmly established by a hasty enthusiasm, which would have us already consider the infectious character of the disease a foregone conclusion, but by diligent work and persevering study." It appears to me that, in answering the second question, I am safe in concluding,—

1. That phthisis pulmonalis in the majority of cases means phthisis tuberculosis.

2. In phthisis tuberculosis we always have the presence of the bacillus of tuberculosis.

3. The bacillus does not find a suitable habitat in normal respiratory organs.

4. There are antecedent diseases which prepare a resting-place for the bacillus, and thus lead to phthisis.

5. Occasional cases of lung disease pass to a fatal termination with all the symptoms of tuberculosis, yet never become tubercular, never show the presence of the bacilli.

6. In the present state of our knowledge, we are justified in speaking of bacillary tuberculosis and non-tuberculous consumption.

QUESTION VII.

WHAT PRECAUTIONS SHOULD BE TAKEN, AND WHEN, TO PREVENT THE INVASION OF TUBERCLE BACILLI; AND WHAT MEASURES SHOULD BE EMPLOYED TO FORTIFY ENFEEBLED CELLS AGAINST THEIR ATTACKS?

QUESTION VIII.

HOW CAN THE MEDICAL PROFESSION MOST WIDELY DIFFUSE AND INCULCATE THE IMPORTANT TRUTH THAT CONSUMPTION IN CHILDREN IS OFTEN THE RESULT OF PARENTAL FAULTS AND VICES?

Discussed by Dr. Wm. H. Flint, of New York County.

The above questions, proposed to me for discussion by the distinguished leader of our debate, are of vital importance, embracing, as they practically do, the entire prophylactic treatment of pulmonary tuberculosis, which disease is, according to Strümpell,[1] alone responsible for one seventh of the world's total annual mortality. Proceeding to answer the above questions in the order of their presentation, I shall first endeavor to show when precautionary measures, calculated to prevent the invasion of tubercle bacilli, are indicated. It is unnecessary that the healthy members of the community be perturbed by compulsory preventive measures against pulmonary tuberculosis. Dr. Didama has taught us, in an admirably concise yet widely comprehensive paper,[2] read before this

[1] Adolf Strümpell, "Lehr. d. Spec. Path. u. Ther." Leipzig, 1885, Vol. I, p. 302.

[2] H. D. Didama, "Tubercular Consumption, Is it ever inherited?" "Trans. N. Y. State Med. Ass.," 1885, p. 56.

Association at its last annual meeting, that, although there are almost innumerable influences favorable to the development of tubercular consumption, yet the coëxistence of two causes is, generally speaking, indispensable to the inception of the disease. These fatal ætiological factors are, to use the distinguished author's exact expression, "abundance of bacilli and inherited cellular vincibility." Having admitted the accuracy of these premises, the present writer would formulate his answer to the question, "When should precautions be taken to prevent the invasion of tubercle bacilli?" as follows:

Prophylactic measures are urgently indicated whenever the above named essential conditions, viz., "an abundance of bacilli and inherited or acquired cellular vincibility," simultaneously obtain.

Let us now inquire under what circumstances this destructive association of ætiological agents is effected, in order that we may better understand the nature of the precautions to be adopted. Since phthisis is practically a world-wide scourge, the first indispensable condition for its development, viz., an abundance of bacilli, is present wherever numerous human habitations are closely aggregated; but these bacilli are naturally present in greatest numbers in an atmosphere charged with the exhalations and contaminated by the sputa of phthisical patients, their quantity being measurably proportionate to the number of consumptives aggregated in a given locality. The usual medium of infection is, thus, the expired air and air containing particles of desiccated and pulverised tuberculous sputa. The possibility of infection from tuberculous domestic animals, as from pet cats and dogs, is also to be borne in mind. Milk furnished by cows with diseased udders may become the vehicle of contagion, as well as the flesh of swine and of cattle affected by the pearl disease, which term is a synonym for tuberculosis. Primary tuberculosis of the digestive tract results from infection derived from the last named sources, but secondary pulmonary disease may be a subsequent result. Cases of primary genito-urinary tuberculosis call attention to the fact that systemic infection may

occur through this channel; and primary glandular, osseous, or cutaneous tuberculosis, although of dubious origin, suggests the possibility that the lungs may be invaded from foci situated in the various organs originally involved.

The practical impossibility, for civilised man, of escaping exposure to the tuberculous poison, or of repelling the invasion of this invisible and intangible enemy, might well appall the bravest heart were the infection equal in virulence to that of the eruptive fevers. In that case, the larger cities must soon be transformed into vast plague-spots, whence one would flee as from a leprous community. Thanks, however, to the inherent capacity for resistance against the invading micro-organism possessed by healthy cells, and to the comparatively slow growth of the bacilli, persons of ordinary vigor may long be subjected with impunity to the incursions of these omnipresent bacteria. Each medical diagnostician is habitually exposed by such close contact as is necessary for the thorough examination of his phthisical patients to their contaminating exhalations, yet does not contract consumption except when deprived of preëxistent immunity by depreciation of his vital powers.

The cases usually presenting the second indispensable causal element, viz., inherent cellular weakness, may be roughly classified as follows:

1. Infants of tuberculous, weakly, or diseased parents.
2. Asthenic subjects, and those suffering from acute or chronic disease.
3. Persons already tuberculous.

A diseased parental organism may readily transmit to its offspring a cellular decrepitude prone to invite an inroad of the enemy which, in the case of an infant remaining in close relations to its tuberculous parent, constantly besiege a pulmonary citadel already battered and undermined. Children of weakly or diseased parents, asthenic persons, or those suffering from constitutional diseases, whether acute or chronic, and persons already phthisical, being the unfortunate possessors of enfeebled cells, need only be exposed to the specific

infection, in order to present the fatal coincidence of conditions necessary for the commencement or the farther development of phthisis.

In answer to the question, "What precautions should be taken to prevent the invasion of tubercle bacilli?" the writer would suggest that infants of tuberculous parentage be at once removed from the parents' custody, and consigned to the care of intelligent and healthy wet-nurses, whose surroundings should be hygienic in all particulars, and that, subsequently to weaning, the little ones be entrusted to judicious and healthy friends or relatives. Absolute separation need only be insisted upon until the age of infancy be passed, unless the children's hereditary constitutional enfeeblement be not readily outgrown, in which case a still longer isolation would be necessary. All persons, of whatever age, presenting evidence of cellular exhaustion, ought to be speedily removed from contact with tuberculous persons or animals, and those measures adapted to the reinvigoration of their enfeebled cells, to be presently enumerated, immediately inaugurated. These remarks apply with double force to phthisical patients, and in order to prevent auto-reinfection, their sputa should be thoroughly disinfected with strong solutions of carbolic acid or of bichloride of mercury, and finally burned. All of these principles could not be applied to the management of patients in hospitals, owing to space limitations, but phthisical inmates of these institutions ought at least to be isolated from other patients, their sputa and excreta being carefully disinfected. Owners of tuberculous animals should promptly sacrifice them on the altar of devotion to the human species. Rigid governmental inspection of suspected milk and meat should exclude these vehicles of infection from our markets, while cutaneous, glandular, osseous, and, whenever practicable, genito-urinary tuberculosis should be promptly subjected to appropriate surgical treatment.

It is impossible, within the prescribed limits of this discussion, to answer in detail the following question: "What measures should be employed to fortify enfeebled cells

against their attacks?" *i. e.*, the attacks of the tubercle bacilli. The principles underlying these measures are, however, sufficiently simple. They consist in rational and persistent efforts to prevent the action upon the enfeebled cells of all influences tending to farther impair their vitality, and in the adoption of such measures as will directly augment their power of resistance. Since the attainment of either therapeutic end, on behalf of the pulmonary cells, implies the exertion of a similar influence upon those of all the tissues, it is evident that the curative means directed to the accomplishment of the proposed objects must act upon the system at large. The influences tending to still more depress the vitality of degenerate cells, by a general systemic action, are all possible unhygienic conditions, chief among which may be cited impure air, excessive moisture, insufficient clothing, absence of sunlight, mental distress, low altitudes, and food deficient either in nutritious qualities, in quantity, or in both these essential characteristics. The most potent vivifying and regenerating influences are the conditions directly opposed to those just enumerated. Exercise in the open air, within the bounds of slight fatigue, preferably taken at such an altitude that the climate may be mild, dry, and uniform; sojourn on inclement days, and sleep at night, in well ventilated and warmed rooms; clothing of a character such as to ensure uniform surface temperature; occasional sponge baths; freedom from care and anxiety; sufficient nourishing food,—these have ever been known as the best non-medicinal agencies employed for the restoration of constitutional vigor. To these health-giving measures may be added tonics, to reëstablish an appetite. Arsenic and quinine are perhaps the best to fulfil this indication, and iron is useful if anæmia exist. If there be much prostration, a moderate amount of light wine may be advisable, given with or without cod-liver oil containing the hypophosphites of lime and soda. In the presence of cachexiæ, such as the syphilitic or the scorbutic, appropriate specific treatment must naturally be adopted.

It now only remains for me to answer the question, "How

can the medical profession most widely diffuse and inculcate the important truth that consumption in children is often the result of parental faults and vices?" The dissemination of this important doctrine may be best accomplished by faithful and persistent efforts on the part of individual physicians to impress this vital truth upon the minds of those patients whose confidence they possess. Serious conviction, true human sympathy, and the sense of a great duty to be performed, are the most important prerequisites of success in the proposed crusade. Kindly, convincing arguments and patient reiteration are the weapons with which each crusader should be armed. The result of an enlightened strategy in impressing this important truth upon the minds of the laity would be to cut off the supplies, to decimate the ranks, and to alienate the allies of the rapacious parasitic hordes. A strong bulwark being thus erected against these Lilliputian, yet terrible, enemies of mankind—the bacilli tuberculosis—the struggle for "the survival of the fittest" might frequently end in a decisive victory for the pulmonary cells.

QUESTION IX.

WHAT THERAPEUTICAL BENEFIT HAS BEEN DERIVED FROM THE DISCOVERY OF THE BACILLUS TUBERCULOSIS?

QUESTION X.

WHAT MODE OF TREATMENT PROMISES MOST EFFECTUALLY TO PREVENT OR ARREST TUBERCULOSIS, AND PROMOTE THE REPAIR OF LESIONS?

Discussed by JOHN SHRADY, M. D., of New York County.

In all sciences are begun certain movements which in their essential character are revolutionary, and as such they never go backward. Robert Koch, as a recognised leader, has shown us a promised land, destined to be fertile beyond precedent. Before his grand discovery, warfare upon disease was really without a plan: it certainly was not aggressive, indeed far from being in the direction of force. "Putting the system on the defensive" was a ready phrase in the mouths of all the teachers. There was, it is true, the suspicion of a fallacy; but where was it? Like the augurs of old, physicians looked into each others' faces, but, unlike them, they smiled not.

Among all the maladies, phthisis headed the black list, and beyond fixing the diagnosis but little was done. "Build up your patient," was the stereotyped advice—yes, even when the quicksand was undermining the wall. And what of the builders? They may have had skill, but their plans were worthless. To sum up the matter: Suspicion regarding the inutility of every procedure, prominent as an unconfessed conviction in the minds of all, governed and withal crippled

one's best efforts, and to such extent that with the recognition of the disease came the grim prophecy of inevitable death. Special exercise of the lungs, as a feeble tribute to the great doctrine of demand and supply, accomplished something by way, perhaps, of accommodating the faulty function to new environments. Still there was a something wanting, and there was a continual groping after a more rational treatment. Indeed, there were no therapeutical enthusiasts, until there came slowly, to challenge the prevailing faith in the hereditary transmission of phthisis, the new dogma of infection, and the grand discovery of specific germs. Micro-organisms began to explain away many mysteries, and "seeing was believing." As in the world around us, that part of it at least over which the eye held domain in the matter of the grosser organisms, so here did the microscope open up unsuspected fields where germination, segmentation, and every form of multiplication were rife. Some called the forms causes, others evidences; some said the microbes were generators, others that they were scavengers; some maintained that the growths had found a congenial soil under favoring influences and that the sole hope was in sterilisation, others that only the growths themselves required destruction as encroachers upon the domain.

By way, perhaps, of a digression essentially impertinent to the present discussion, I shall advert to a few points which have been accepted as canons by the profession. These are to the effect that superficial ulcers in common with the more patent lesions heal much more readily by antisepsis, and the fact prompted the alert medical mind to ask the question, Why may not also the walls of a pulmonary cavity follow the same law? Necropsies revealed many a scarred lung; and why, came the query, with the possibility of spontaneous cure, should not the chances be increased by extraneous aid? The hypodermic needle had achieved much in its dealings with intra-corporeal cavities in the way of diagnosis, and the trifling puncture had caused no evil. Therefore, in consideration of the harmlessness of the procedure, why not

advance a step farther, and spray within as well as without? What ratiocination more natural? The laity called the departure an experiment: with the profession it was only a sequence. Inhalations, such as they were, of iodine, turpentine, tar, and carbolic acid, promised much, but accomplished little, if anything; they were in vogue, indeed, before the time of Koch, but they were chiefly directed toward the softening of the mucous membrane. Their use required persistency, and such montony was not destined to be popular. Even little heaps of finely powdered nitrate of silver were made convenient for the purpose of being puffed through the air-tubes, with the hope of finding a hap-hazard nidus in some undemonstrable cavity. This last school of therapeutics, it is only just to add, had but few pupils. Irrigation, also, notably in the late war, had been in persistent use for gunshot wounds; and thus had cleanliness been insured, with a certain ignorance of the modus operandi, at least, in accordance with the revelations of future years. Clearly, however, no current could be established in the lung for flushing out purposes; therefore resort must be had to more philosophical methods.

The danger of puncturing the lung had long ceased to be a bugbear when studied in the glare of gunshot and stiletto wounds: hæmorrhage and shock I omit from the catalogue of lethal effects. The oft-quoted case of Brig. Gen. James Shields, through whose lung during the Mexican war there sped a grapeshot, and subsequently through its track was drawn a twisted silk handkerchief as a remover of tissue *débris*, treatment in all other respects being practically *nil*, only startled the profession without an impeachment of the truth of the story. Dr. Benj. Howard, late of the U. S. Army, also threw a little light upon the subject in his treatment of lung wounds by hermetically sealing. These with other proofs awakened the suspicion that even so vital an organ as the lung might brook departures from orthodox methods without essentially crippling its function. The way for a more active method of dealing with the difficulties of the question was thus made open.

All this while the bacillus tuberculosis had as yet not been stained, and therefore did not belong to science. Even when the eye recognised it, its home and its character had to be determined by culture. It was found to be aerobic, non-motile, with its habitat not in the blood but in the areolar tissue. It appeared as an entity, as a form, a parasitic vegetation, slow in growth but capable of rank multiplication, "the spores having the appearance of clear vacuoles." As cold is inimical to its growth, probably high altitudes kept death in abeyance as much by oxygenation as by the prevention of micro-organic life. There being of necessity more tissue change, more rapid metamorphosis, there was less opportunity for the work of the bacillus,—just as some vegetations do not so much destroy as occupy territory, the baser crowding out the nobler growths. If bacteria "can never be found apart from the degeneration of organic matter,"—and that statement seems to express the present expounding of the law,—"why," pertinently asks a writer of skeptical views, "may not the bacillus tuberculosis, which is so generally found in connection with tubercle, and *never before it*, be a beneficent factor sent to destroy the deleterious properties, either physical or chemical, of that tubercle, break down its organisation, and bring it into a state to be ejected from the system?" [1]

In regard to this moot question, another writer, with a dash of sarcasm and some little rhetoric, was constrained to say that "the existence of bacilli is still only a luxury in diagnosis, not an indication in the choice of treatment." [2]

But a truce to my discursive comments, and to the discussion of the subject to which I have the honor of being assigned. The facts and observations as above detailed invited the courage of the experimenter; but still the greater difficulty lay in the direction as to which one of the many antiseptics was the special natural enemy of the vegetable parasite, dependent as it was upon the conditions of the human organism for its ex-

[1] "Medical Fashions in the Nineteenth Century." Edward T. Tibbits, M. D. H. K. Lewis, London, 1884.

[2] "The present status of bacterial pathology, and its relation to therapeutics." Dr. Albert N. Blodgett, Boston, Mass. "Medical Record," N. Y., Nov. 13, 1886.

istence. Naturally enough, all eyes were turned to corrosive sublimate as the great destroyer; but its attenuations were too feeble for good, while larger doses might destroy "in one fell swoop." Thus this power, which, outside the human body, ranked as the Samson against whom was to be arrayed an army swarming with recruits, wildly tumbling over each other to fill the gaps of battle, could not well be summoned in the field.

Dr. L. J. McNamara, of this city, has been instituting a series of therapeutic experiments, based upon the fact of the presence of the bacillus tuberculosis. He has been in no haste to publish his results, but has kindly placed a letter at my disposal, in explanation of his views and methods. He uses a funnel-shaped globe, with fine spray tubes and compressed air. He attaches much importance to the rendering the spray so fine that its contact with the surfaces of the hand imparts no sense of moisture. "For," says he, "if the spray be wet and coarse, it will not penetrate beyond the larynx." A word or two regarding Dr. McNamara's results; and these he accepts only in the light as revealed by the study of the sputa, his cases showing a gradual diminution of expectoration after the first week of the new treatment, and a gradual decrease in the number of the characteristic bacilli, ending in their complete disappearance from the microscopic field. The investigator in question does not entirely content himself with the spray, to the exclusion of the rational adjuvants in general use, nor does he base his diagnosis upon the mere physical signs; his tests are crucial, and dependent upon the presence of the stained micro-organism. He summarises his results with an experience of which thirty persons were the subjects. Of the number mentioned, twelve continued treatment about two weeks, eight for nearly three weeks, one for four weeks, and one for six weeks, but the remainder the doctor does not include in his list on account of their irregular attendance. In the case of the patient who persevered for the longest period, there was a purulent secretion filled with the whitish flakes, which are the choice formations for obtaining the bacilli. She had night sweats, anæmia, general prostration, and a teasing

cough. Here the adopted plan of treatment was the internal administration of iron, quinine, with stimulants and an abundance of milk. An inhalation of water weakly carbolised, holding in solution enough biborate and bicarbonate of soda to make it alkaline, was continued for one week, with the effect of increasing the volume of the expectoration, but decreasing its purulency. The next procedure was an inhalation of the Tinct. Iodini Composita, gutt., j; aqua destill., ℥j; glycerin, ʒij,—care being taken to increase the strength of the iodine as the irritability of the throat diminished. "In the last week of the treatment," continues the writer, "I placed her upon a treatment which I regarded as fulfilling all the indications, to wit, listerine with iodine, glycerine, and water. This patient had a hypertrophic rhinitis, combined with a pharyngitis. I examined the sputa for two consecutive days, but sixteen consecutive slides revealed nothing; not even a single bacillus was present. She refused to continue treatment longer, as she was satisfied with the disappearance of her cough and an increase of bodily weight. My diagnosis was catarrhal phthisis, affecting the upper lobe of the right lung, with the beginning formation of a cavity. At my last examination the rales had entirely disappeared, and broncho-vesicular murmurs were heard over the right upper lobe." "So marked was the improvement in this case," says the observer, with conscientious modesty, "that I should have questioned the testimony of my senses were it not that I had fortified myself with the microscopic demonstration of the bacillus tuberculosis."

Now for a reference to the choice of agents. Gougenheim, of Paris, it is true, reported thirty-three cases of intra-parenchymatous injections of the sublimate (strength, 1 : 2000, 1 : 1000, and 1 : 500), and of this number only ten died. He plumes himself upon the fact that no muscular, pleural, nor pulmonary lesions were found: only this;—nothing whatever of the real proofs of the restoration of continuity. Dr. James R. Leaming, of this city, has a favorite, also, in the other salt of mercury—calomel—in fractional grain doses, as

a defibrinator; but the newer pathology explains its beneficent action as being due to the fact that it is an antiseptic of the pronounced chloride type.

With the confession that I am not quite settled in my own views as to the proper role of the parasite in question, or as to the wherefore of its life, I still think that the experiments of Dr. J. Blake White are steps in the right direction as far as local medication is concerned. His formula may be somewhat complex by reason of giving too much importance to carbolic acid, and by the non-essential addition of the blended anodynes as cough-soothers, yet, as meeting possible therapeutic problems, should be well and thoroughly tried.[1] The iodine, in my opinion, is the essential agent, as being the special stimulant of the glandular system,—a fact which need not interfere with its reputation as a germicide. I concede privileges, as I intend no robbery.

Prof. Lepine, of Lyons, France,[2] claims that the antiseptics gain by admixture,[3] and in his tentative treatment of pneumonia has used solutions of benzoate of sodium (afterwards discarded), iodide of potassium saturated, and bichloride of mercury, 1 : 40,000.

Abroad, however, where faith in carbolic acid as a disinfectant rather than as a deodoriser still abides, may be found the majority of its friends. Here in America, its empire seems on the wane. M. le Dr. Filleau, of Paris,[4] lays down

[1] Dr. White's formula is,—

℞ Atropiæ, grs. ⅓.
Morph. sulphat., grs. ij.
Tinct. Iodinii, ʒiij.
Acid carbolic, pure, gutt. xx.
Glycerine, ʒiss.
Diluted alcohol (20 to 30 per cent.) ʒiss.

M. Sig.: 15 to 30 minims.

[2] Gazette des Hopitaux, No. 115, 1886.

[3] Lepine's mixture: Bichloride of mercury, 1 to 100,000; Salicylic acid, 1 to 1,000; Carbolic acid, 1 to 1,000; Benzoic acid, 1 to 500; Chloride of lime, 1 to 5,000; Bromine, 1 to 10,000; Hydrobromate of quinine, 1 to 2,000; Chloroform, 1 to 2,000.

[4] Dr. Filleau's formula is,—

℞ Aquæ destillat., 95.00
Glycerin, q.s.
Acid. phenic. crystalliz., 1.00

M. Sig.: Of this, one hundred drops (about gr. ij of acid) are injected hypodermically daily, or every other day.

the following axioms: 1st, that carbolic acid is the only anti-parasitic as yet known that can be administered subcutaneously in large doses during an indefinite time without causing accidents; 2d, that under the influence of this medication, the general state of the patient is greatly ameliorated and the local state is at the same time advantageously modified; 3d, that the tolerance and harmlessness of the drug thus administered are demonstrated (symptoms of carbolic-acid poisoning may appear, but they always come gradually, and are quickly relieved by stopping the medicine for a time); 4th, that the treatment must be continued for a long time.

Iodine, which is so readily absorbed that even after inhalation its trace may be found in the urine, ought to be the most efficient agent of our armatarium, so far as philosophy and proof may go hand-in-hand. There are well known objections to its internal use by mouth dosage. Its power may not, perhaps, reside in its germicide behavior; it may act as a corrosive; it may arrest the necrotic tendency by producing a temporary slough; it may heal by a process like to that seen on the surface, which is popularly known as "scabbing over;" the exact *how* is too abstruse as yet to be explained. Suffice it to say, that it suggests fewer objections to its use than its more showy competitors, and that the physical constitution rebels less against its forcible introduction. Dr. Beverly Robinson uses injections of diluted Lugol's solution, and appears to be satisfied with his choice of a destroyer.[1] Other advocates of its use, who have eulogised its prowess in society debates rather than in the journals, may be added.

For the intra-pulmonary procedure of atomisation, Dr. J. Blake White uses a small syringe of the capacity of a drachm, and a wide-necked reservoir for holding the solution to be used.

[1] ℞. Tinct. iodin. æthereal, ℥ij.
Creosoti, ℥j.
Acid, carbolic. ℥j.
Spts., Vini Rectif., ℥j.
M. Sig. Ten drops in respirator, thrice daily.

℞. Tinct. iodin. (Churchill's), ℥j.
Aquæ destill., ℥ss.
M. Sig. Ten to fifteen minims for pulmonary injection.

His needles are made of well tempered steel, of four inches in length, and small aspirator calibre. At their extremities are three or four apertures arranged circularly for spray-producing purposes. For regulating the depth of puncture is arranged along the shaft of the needle a movable guard.

There is still a mode of therapy to be mentioned, that of Prof. Arnaldo Cantani, more conveniently known as the bacterio-therapeutic method.[1]

Dr. Flipovitch, of the Odessa town hospital, at a recent meeting of the Odessa Medical Society, made a very instructive communication on six cases of advanced phthisis, in which he concluded that "no good whatever may be expected from the treatment of tuberculosis by the inoculation of the bacterium termo."

I quote at length from the editorial summary of the "British Medical Journal:"

Having obtained by fractional cultivation pure cultures of the bacterium termo in meat broth, the author took five cubic centimetres of the bacterial fluid, diluted them with ten cubic centimetres of boiled water (37° C.), aromatised the mixture with one or two drops of tincture of peppermint (to disguise an offensive odor), and made the patient inhale the whole by means of Richardson's spray-producer. The inhalations were repeated twice daily. In one of the patients the experiment was given up at the end of a week, since the man's state commenced to grow worse from the very beginning, and fever, steadily increasing bronchitis, and hæmoptysis had developed. Three other patients died under the treatment, one after fifteen days' inhalations, another after seventeen days, and the third after twenty-five days. The remaining two patients left the hospital after treatment for seventeen and fifty-two days respectively. In none of them was anything like a diminution of the expectoration observed. In one of the fatal cases, shortly before death, the sputum became more profuse, more liquid, and assumed a characteristic bad odor, resembling that of a pure culture of the bacterium termo. At the necropsy, numerous excavations "represented, as it were, a culture of the bacterium;" the spleen was enlarged, flabby, partly of a dark-red, partly of a pale-red, color; the liver was also enlarged and anæmic. In the non-fatal cases, nothing like a diminution or disappearance of the tubercle-bacilli from the sputum was detected. In the patient who was treated by the inhalation for more than seven successive weeks, the number of bacilli was distinctly increased during the seventh

[1] "British Medical Journal," Aug. 29, Nov. 28, 1885, March 6 and 13, 1886.

week. In none of the cases was any influence exerted by this treatment on the temperature, or perspiration, or the body-weight, discovered. Finally, Dr. Flipovitch came to the general conclusion that "no good whatever may be expected from the treatment of tuberculosis by the inoculation of the bacterium termo;" while some of his cases seemed to point out that the infection of the human system with the putrefactive bacteria might prove not nearly as harmless as had been alleged.

The bacterium termo [Dujardin] will be remembered as the microbe of putrefaction, not of itself especially formidable, "since there is no potable water in which it is not found in greater or less quantity." [1] The therapy just described is in accord with Pasteur's hypothetical law of inoculation with attenuated virus, so well known to the profession, and is irrational by virtue of its want of comprehensiveness.

As a preventive requirement, isolation, rather than the crowding of even health resorts, should be enjoined. The importance of this precautionary measure, in the light of the growing faith in the infectious character of consumption, is too obvious to need discussion. A relatively cold climate is likely to be more conducive to recovery than a warm one, even provided the variations of temperature have an equally uniform range. A moist atmosphere is to be avoided. All this knowledge was in the possession of the profession long before the natural history of these low forms of life brought the proper prophylaxis sharply to their attention; and hence the willing submission on the part of some patients to even the rigors of what was practically a quarantine in very many cases, can scarcely be claimed as a novelty in practice. Here we have one of those curiosities in science, where there were different premises, but the same conclusions.

From the tenor of my somewhat sketchy remarks, it may be inferred that in common with the profession at large I hope, rather than believe, that antiseptic surgery will carry its banners still farther into the interior. Be the bacillus what it may, enemy or condition, foe or friend, it should be suppressed; its bad name and its bad company cannot win for it

[1] "Microbes, Ferments, and Moulds." E. L. Trouessart. D. Appleton & Co. N. Y. 1886.

a millennium. The war has gone into Africa, and Carthage must be destroyed. Certain it is, that notwithstanding the promising outlook, we cannot yet afford to ignore hygienic, tonic, and climatic influences, since vital resistance must be increased, and we may hope to "turn the balance in favor of the healing process, and against the active germination of the bacilli." Dr. Solomon Smith,[1] in discussing the question, points out the fact that our antiseptic measures receive aid from within, the cavity contents being on the one hand in contact with living tissue, which has a retarding influence upon microbic activity.

In conclusion, I would direct your attention to the subjoined axioms, which I think are sufficiently broad to claim attention.

(1) Investigations, being in the line of a more rational therapeutics, are likely to be crowned with success.

(2) The number of cases, as thus far reported, are as yet not sufficiently numerous to justify unimpeachable conclusions regarding the discovery of a special destroyer of the bacillus tuberculosis.

(3) Compressed air, inhalations of medicated vapors for tubercular infiltrations, and intra-pulmonary injections for cavities, will probably be classed among the methods of the future.

(4) Constitutional treatment and prophylaxis will always be more or less relied upon as essential concomitants even of the newer methods, which in turn are not likely to be abandoned without fuller trials.

[1] "British Medical Journal," vol. 1, 1884, p. 353.

THE PROPER ATTITUDE OF THERAPEUTICS.

By Chas. G. Stockton, M. D., of Erie County.

November 18, 1886.

The theme of this address—the proper attitude of therapeutics—affords a convenient standpoint from which to survey and discuss that branch of our art which is of the most practical importance to humanity, and which has from the beginning encouraged all other departments of medicine. Indeed, it may be said, that these other departments have their existence by the suggestion of the word cure.

Anatomy, physiology, and pathology are means toward the accomplishment of cure, yet their study has been prosecuted with so much zeal that their object is often neglected; and while the investigator in the physiological actions of medicines, as engaged in experiments upon the lower animals, is acknowledged a scientist and hailed as a discoverer, there is comparatively little heard about the man who avails himself of all practicable information on the subject, and then bends his energies to the alleviation of human suffering and the abolition of human ails. Unfortunately for his renown, his studies are in a field having an exact boundary upon one side only; all the other sides are bordered by lines that are apparently as vague as the horizon.

Such is the field of the practical therapeutist; and if the physiologist be designated as a scientist, to the successful therapeutist belongs a more exalted name: it is philosopher.

Physiology has accomplished much, so much, indeed, that there is a tendency on the part of some to try all cases before her tribunal, with recourse only to established physiological laws.

It is not the intention of these pages to discount the value

of one department of medicine, nor to treat unbecomingly the opinions of those who anticipate such familiarity with vital laws and processes that deviations from the normal may be corrected favorably by exact remedies that shall be applied in conformity to rule. It is intended, rather, to point out some reasons why this exact medicine can never traverse certain unascertained limits: beyond those limits we come upon the province of individuality.

Here are the habitations of temperament, diathesis, idiosyncrasy, dyscrasia, and cachexia; here reside the forces that modify nutrition; here is found the origin of difference in constitution and expression.

In late years, these terms have been out of favor. It has been said of some that they were framed to express that which had no existence in fact, and of others that they had received too much attention in the past. Doubtless there is some ground for these objections; but there is a present danger in that while searching for objections, we are losing sight of truth, the great importance of which was recognised by our professional ancestors, who were in many ways wiser than we.

Every clinician admits the peculiarity of individuals. It is exhibited in functional activity no less than in external configuration. Men are unlike in face, form, in mental and moral qualities, and in all other vital manifestations. Each is the exemplification of an absolute ego; each resembles, yet is unlike, his neighbor; each is peculiarly affected by common conditions and environments, such as habit, occupation, diet, climate; and, finally, each is peculiarly affected by drugs.

Now there are those who essay to escape from these facts; their teaching and their text-books prescribe the laws to us, with phrases positive, and with citations respectably attired; by experimentation, demonstration, and association, they fashion our minds, during the formative period, into unnatural ruts and grooves; they anticipate the very wrinkling of our convolutions by their premature physiological authority; and, as a result, we have come to regard medicines as agents that control vital action with no little certainty.

With all these recent acquirements, can we positively aver that we manage disease with greater success than did Thomas Sydenham? And is it not time to inquire if modern methods are not leading us away from old knowledge, in order to discover new? Not, I repeat, that the physiologist is to be discredited, nor the sound of his voice subdued. Let us listen to him attentively, and with our ears open; but at the same time let not our eyes be blinded to the fact that the laws which he expounds are modified by special influences which he cannot explain.

I come now to speak more particularly of these modifying influences, or natural traits, by which is meant idiosyncrasy, diathesis, etc. And, while admitting that manifestations, formerly attributed to traits, have been accounted for since on less general principles, nevertheless there are traits, ever present traits, modifying, qualifying, placing conditions upon each function; upon cogitation and volition; upon sensation and motion; irritability, secretion, and every conceivable inherent property of living animal tissue. Are not these attributes worthy of the most respectful interest of the therapeutist? And does not their study call for as exalted qualities of mind as those bestowed upon physiology or pathology? Let him observe a score of men, subjected for a prolonged period of time to paludal influences, and the observer will discover that no two of them are affected precisely alike. There will be examples of intermittent fever of the quotidian, tertian, and quartan types. Some cases prove pernicious, others latent; and still others relapse into a state of chronic malaria, showing itself in neuralgia, sleeplessness, biliousness, and boils; or into a state of nervous excitability in which a man loses his religion, and envies him whose spirit has fled this "anatomy of melancholy." Or, let the therapeutist reflect upon those "visceral neuroses," so beautifully depicted by Mr. Allbutt,—neuroses which, when formerly called by other names, gave him no response, not even when he pronounced them dyspepsia, gastro-enteritis, bilious colic, or inflammation of the womb, and treated them accordingly

with restricted diet, anodynes, and speculum medications. With these facts before him, he must perceive that the trait modifies the course of disease; that it predisposes to, that it repels, that it determines the chronicity; that it enlightens the prognosis; that it is a potentiality in effecting the transmission of disease.

In his interesting lectures on "The Pedigree of Disease," Mr. Jonathan Hutchinson well remarks,—"There can be no question whatever as to the reality of the differences between individuals, nor any doubt as to the importance of the recognition of these differences by the medical practitioner. By far the commonest [mark the word] error of the prescriber, and one which most interferes with his success, is the easy-going habit of regarding all persons as alike, and recognising differences only in their diseases."

If it is wrong thus superficially to regard the ailments of mankind, to medicate our patients in accordance with preconceived notions as to the actions of remedies is surely no less reprehensible. How often do we see so called "heroic medication" where no drug is required, or where an entirely different line of treatment seems indicated. It is not alone from regarding text-books as engrossed authority, nor from lack of experience. The fault too often resides in regarding drugs as agents whose actions are determined, as potent alike to all men, and in a prescribed manner. Thus, a patient is supposed to need iron, and iron the patient gets. The digestion fails, the liver is irritated, the bowels become constipated, there is headache, languor, and distress; but, heedless of this, more iron is given—perhaps in different form, possibly in combination with other agents, but still iron, iron.

Again: Some persons are especially susceptible to quinine; and indeed this drug, now so commonly employed by the people, is either much more harmful than is generally supposed by the practitioners, or else there is on their part a reckless disregard for the biliousness, "nervousness," and imperfect metabolism in their patients. And so you see quinine prescribed constantly for all manner of disorders. It is quinine

for the sthenic and the asthenic; quinine for excitement and for depression, for pain and paralysis, indigestion, hysteria, and dentition. May Hermit Peter look backward, and send some one to lead a crusade against, not the infidels, but this time against the believers—the idolatrous believers in quinine.

I am acquainted with a physician, once a hardened and vigorous doser, who has recently become a convert to homœopathy, giving as his reason that he has far better results now with his infinitesimal doses than he formerly had in regular practice. This is undoubtedly so, and the stupid fellow unconsciously has uttered what I conceive to be the true reason for the tolerance of homœopathy,—that it is better to do nothing than to do evil.

If there are those yet skeptical as to these therapeutical sins of commission—the giving of drugs from precedent and usage rather than from the authority of thoughtful observation—let me remind them of the sins of omission of which the profession has been guilty. Among the prominent ones are those appertaining to the use of venesection and mercury, each of which is entitled to stand conspicuous in the very front rank of therapeutical measures. And yet the former, for nearly a generation, had been cast into outer darkness; and as for mercury, until very recently it had for years led a surreptitious and an apologetic existence. So fashion makes us all her victims; and when we remember the results, as shown in the dogma of practice, it does not seem so remarkable that the many *peculiar* actions of medicines are passed over unobserved. The fact is, that only a few men think: the great majority repeat the thoughts of others, and misapply them.

No doubt bleeding and calomel reached their former excellent standing from the good they did when properly used; and they fell into disrepute, not through any fault of theirs, but through their misuse in the hands of those who did not think, but misapplied the thoughts of others.

And if, as a result of using their books instead of their brains, the modern therapeutists continue the uncalled for and misapplied use of the tonic, the antipyretic, and the hyp-

notic, it is only a question of time when iron, quinine, and hyoscyamus, not to mention other popular agents, will become unfashionable, and suffer in reputation as other good remedies have before them. Even now you may behold the eclipse of ergot, once conspicuous in the esteem of the obstetrician, but through his abuse of it now falling into an undeserved obscurity.

Who can deny that many a drug, good and obedient to its master, has through bad usage in unskilful hands developed such disturbing properties that it ends forgotten in neglected rubbish. Hence it is that the cry goes up for relief from our encumbered pharmacopœia; and at the same time, regardless of harmony, another appeal is heard: it is for more new remedies.

The time has come for *study*, and more practical study, of therapeutics. It is thought necessary for our students to be good anatomists; but, indispensable as this is, it does not compare in importance with having them adequately trained in the actions of remedies and the indications for their use. And they should be taught, not alone their ordinary typical effects, but their extraordinary and peculiar actions in individual cases, in constitutional traits as well. If this be requiring too much of students, to let them into practice with the belief that remedies have definite, positive actions on all men alike is requiring so little of them that there is liability in their practice to endanger the health of the community which supports them.

As long as physicians have the privilege of dosing their patients, and as long as they exercise that privilege to the extent now observable, it is, in common fairness to all concerned, requisite that they study the evil as well as the good results following the administration of medicinal substances.

Probably the untoward effects of drugs are never so fully appreciated as when they lose popular favor and are branded as malefactors. Thus, it is unlikely that the evils of venesection, or mercury, or purging will ever be lost to sight, even when these agents are restored to their rights; and so it

comes to pass that there is a compensation in their ostracism.

But it would seem that, greatly to the benefit of humanity, these great oscillations in professional sentiment relating to medicines might be lessened if the actions of these substances were sought for with relation to individual traits or peculiarities. I suppose that to say individual traits, is equivalent to saying individuality in nutrition; and that the explanation of constitutional differences is to be found in the elementary differences of protoplasm as existing in individuals, the proper mixing of whose elements depends upon the influence exercised over the nutrition of the protoplasm by the vital properties of the controlling nervous system. For energy, vital activity, comes from nutrition; and how can there be distinguishing traits in vital activity without commensurate distinction in the processes of nutrition? and how can there be these differences—regular, coördinate, natural differences—save with the consent and by the control of the central nervous system, where presides the ego, operating, through countless paths, to influence the nutritive processes, energy, and its expression in individual traits? In this connection, it is well to remember that, in the embryo, the first organs that are formed after the differentiation of the blastodermic membrane are the brain and cord, which, thus early in the individual's existence, begin exercising that control over the protoplasm, as it forms and develops into the being with all his individualities.

And it is also to be remembered, that when healthy animals are subjected to death by starvation, this nervous system is the last to waste and decay. The fats are consumed, the secretions dry up, the muscles perish, the viscera shrink away; but still the nutrition of the nervous system is but little impaired, and there it stands, hand in hand with life, presiding over the nutrition of other organs less highly endowed.

It is to nutrition, then, and it overruled by the nervous system, that we must look for constitutional difference, and for the peculiar actions of our remedies, and not alone the

unusual ones, but the typical actions as well. The effects of a medicinal substance, as we see it manifested in the calming of pain, in the suppression of motion, in the lowering of temperature, are no less effects upon nutrition than are transfusion of blood, or a vegetable dietary.

When we perceive the unexpected in the action of a drug, we may best explain it by attributing the phenomena to peculiarities in nutrition, otherwise known as idiosyncrasies. Therefore it is impossible for us to know beforehand, by physiological prescience, anything more than the somewhat probable effects of a therapeutical measure. Its actual performance is the test; and this we can prejudge only by studying the idiocratic marks, the natural evidences of individual traits: and this is precisely what the sagacious therapeutist strives to do. Thus we may account for the fact, that one man benefits his patient with belladonna, while another only dries the throat and dilates the pupil; that one relieves an eczema by administering arsenic, a practice which, in another's hands, merely aggravates the affection.

And so, gentlemen, I conclude that the proper attitude of the therapeutist is in accepting the laws of the physiologist, when these do not violate the inexplicable results of his observation. The square, the compass, and the theodolite have no place in therapeutics.

REMARKS UPON FRACTURE OF THE NECK.

By R. B. Bontecou, M. D., of Rensselaer County.

November 18, 1886.

Fracture of the neck—by which I mean the cervical portion of the spinal column—is of so serious a character that any method promising to effect relief is worthy, I think, of attention. Most surgical authorities consider this accident as invariably fatal, sooner or later, and even fracture of the dorsal portion of the spinal column is usually followed by death. It has been my fortune to have three cases of fracture in the cervical region. One, the only one that would submit to my treatment, made so good a recovery that I think it worthy of mention.

A man, aged 22 or 23, fell backward out of a wagon and sustained a fracture. I saw him in the evening, soon after the accident, completely paralysed. There did not appear to be deformity enough to indicate any dislocation, but in the course of the examination of the spine crepitation was distinctly felt. I was satisfied that there was fracture, and proceeded to apply to him the same principle that we adopt in fractures of the extremities. First shaving his head, I applied adhesive plasters to the side of the face, and secured them firmly. From these a cord was passed through the head of the bed, and a weight of about fifteen or twenty pounds attached to make extension. The body was kept upon a gentle incline, without any pillow. I maintained this extension for a little over two weeks. This was in October, 1866. Of course, he had paralysis of the bladder, and of all parts below, and respiration was somewhat embarrassed; but finally, in the spring of 1867, he was so well able to labor that he paid his bill to me by painting my house, and continued for twenty years thereafter, more or less, to earn his own living. He died recently. I wished to verify the accuracy of the diagnosis, and was permitted to examine the parts implicated. I found that the fourth, fifth, sixth, and seventh cervical vertebræ were all fused in one solid mass.

In the second case, an elderly man received his injury in the same manner. Sitting in a wagon, he fell, flexing the head upon the trunk, and producing the same symptoms, entire paralysis. His affectionate wife

would not allow me to torture him by extension. He survived only a few days.

The third case was a young man who fell fifteen or twenty feet through a bridge, and was found afterwards completely paralysed. In that instance, also, the wife was so tender in her feelings that she would not allow her husband to be tormented by any effort to treat him, and he died. In that case there was priapism.

I am unable to find in any authorities the application of permanent extension in this way for the treatment of fracture of the cervical vertebræ. It is generally recommended to place them in a comfortable position, and trust to the force of nature. If the fracture is oblique, through the body of the vertebræ, the muscles of the neck, it seems to me, have a tendency to force the fragments in upon the canal, and extension would be very likely to prevent such an occurrence: hence I would strongly recommend the employment of the extension. It is easily applied; and although, from the severe tension on the patient's face and scalp, it is not comfortably borne, the amount of weight can be tempered to the toleration of the individual.

DISCUSSION.

Dr. E. M. Moore.—This has been my practice precisely, for about thirty years. When it first came to be the custom to use extension of the thigh by adhesive plasters, about thirty years ago, a case like those described happened to come into the hospital, and I immediately had the same appliance fastened to the chin and head, with a rope from the top of the head and a pulley at the top of the bed, and made extension. My cases have all died. There is this to be said in favor of the plan, that it is the right one to pursue for the relief of suffering, because at the point of fracture the irritation is apt to be very severe. The same argument applies to fractures of the back. My first case was in the back, about two tons of lumber having fallen on a man, breaking him as you would a stick; the suffering was very great. In this instance, I put the adhesive plaster upon both legs, and then put the inclined plane the other way. I think this the right plan always. I can recall now three cases of fracture of the back, with paralysis, where the patients recovered by this method. It is common-sense, and certainly very efficacious. I think that I would add pulleys on the limbs when the back is broken, so as to make sure of sufficient extension—as sometimes the parts will not come together by the weight—and then apply a

plaster of Paris jacket, let it take the mould, and keep the back perfectly still.

Dr. W. S. Tremaine, of Erie county, wished to ask if there were any danger of producing sudden death by an attempt to make reduction. He had seen a number of such fractures at the Emergency hospital, but had always feared that he might kill the patient by making extension. A recent case which he had seen suggested cutting down upon the parts, and coaptating them.

Dr. Bontecou replied that he made traction in the axis of the spine, and thought that there was little danger if it were carefully exerted in that direction. Of course, lateral or rotary motion would be dangerous. If there were any suspicion that the fracture was oblique, he would advise powerful extension with weight and pulley.

Dr. Tremaine.—How is counter extension kept up?

Dr. Bontecou.—The body being on the incline gives sufficient counter extension.

A SHORT REVIEW OF THE FEVER EPIDEMIC IN KINGSTON, ULSTER COUNTY, DURING THE WINTER OF 1884–'5.

By H. Van Hoevenberg, M. D., of Ulster County.

Read by title, November 18, 1886.

The city of Kingston was visited during the winter of 1884–'5 by an epidemic of fever, the nature of which has since continued to be a source of disagreement between the physicians residing there. By some it is maintained that it was of a purely malarial character; by others, that it was typhoid; and some class it as a combination of both, and call it typho-malarial. In my judgment the latter is the best classification, for, while it is true that some of the cases were purely typhoid, it seems to me that we can scarcely regard as pure typhoid a fever in which there are some of the symptoms, as tympanites, tenderness of abdomen on pressure, and diarrhœa with ochre-colored stools, but where the course of the disease is marked by a regular daily remission, sometimes combined with an intermittent character, although at no time would the patient be free from fever, and where variations in temperature are greater than is the rule in typhoid.

I had the privilege of meeting, during the continuance of the epidemic, one in whose skill as a diagnostician I think all here had confidence. I refer to our late Fellow, Dr. Austin Flint, who had been called there in consultation in one of the typical cases; and after discussing the epidemic, he gave it as his opinion that the fever should be called typho-malarial.

I had expected to be able to give a very complete history of the epidemic; but upon endeavoring to gather up the facts from the different sources, I found that only a very few had kept any history of their cases, and so I have been obliged to make as close an estimate as possible.

As nearly as I can ascertain, there occurred in the city about two hundred and fifty cases, with twenty-seven deaths. The number of deaths I have taken from the records of vital statistics in the city clerk's office, and I find them divided as follows: Remittent, thirteen; typhoid, eleven; typho-malarial, three.

The greater portion of these cases began with the ordinary symptoms of simple remittent fever, headache being very prominent. The temperature was usually high, ranging from 102° to 103° in the morning, and 103° to 106° in the evening (and in a few cases still higher, though they were, I believe, invariably fatal), and would continue in that way for several days, after which, if improvement took place, the evening temperature would decline for a few days, and then the morning temperature would gradually become lower. In a few cases the evening temperature would fluctuate from 105° to 106° for from three days to a week, and then, if recovery took place, would gradually decline to normal. I noticed that there was developed in some cases, after the second week, a tendency to an intermittent type also, the average temperature being higher one day than the next, although there would always be the daily exacerbation. The variations between the morning and evening temperatures would often be as much as three and one half degrees, and occasionally more. Many of the cases having decided remittent symptoms, would also present symptoms of typhoid, as brown tongue, tympanites, iliac tenderness, with or without diarrhœa, sometimes followed by hæmorrhages, but generally without, or low, muttering delirium. A large number of the cases commenced as though they were going to be very severe ones, but after a few days the temperature would fall rapidly to normal, and convalescence take place after from four to six days' illness. Many of the cases were long, running from four to six weeks, and occasionally followed by a relapse. Convalescence as a rule was slow, the patient remaining very weak for several weeks after the fever had entirely disappeared.

A few of the physicians have reported to me cases in which

unusual complications occurred. In one case, a man in middle life, after a sickness of nearly three weeks, had hemiplegia of the right side, and died on the second day. In two cases, one a girl aged fifteen, and the other an adult male, the fever was followed by abscesses: both recovered.

In two cases, temporary insanity, lasting several days, developed after the fever had entirely disappeared. A few of the cases were undoubtedly pure typhoid, their history being that of typhoid from the beginning; but by far the greater number were unmistakably of a mixed character, and could not properly be classed under either the head of typhoid or remittent alone. The treatment given in most of the cases was quinine in various sized doses, according to the ideas of the attending physician, with a good nourishing diet, and generally stimulants; in some cases fl. ext. gelsemium in five to ten drop doses, either alone or in combination with quinine, and with good effect. Antipyrin was also used quite extensively with beneficial results, as far as lowering the temperature was concerned; in one or two cases the use of it had to be stopped on account of the depressing effect upon the heart when given in doses of five grains every four hours. After careful inquiry, I am satisfied that in the cases treated by the homœopaths the plan of treatment was substantially the same as that which the regular physicians adopted.

Our city is built on high ground, except the eastern portion, which is on the slope towards the river, and is usually healthy as regards fever. Of course, we have cases occurring occasionally, but not in sufficient numbers at any one time to be considered as a prevalent disease. Like all the country around us, we have had malarial troubles to a greater or less extent, but we had not had as much during 1884 as for several years previous. During the year 1883 the streets of the city had been torn up for the purpose of laying water-pipes; this continued to quite an extent during the summer of 1884, and to this a great many attributed the fever. In addition to this, our board of health, which had been reorganised in the spring of 1884, were very active in causing all cesspools, water-

closets, etc., many of which had not been emptied of their contents in years, to be thoroughly cleansed. In this way a large quantity of decomposed and decomposing material had been stirred up, and to my mind this presents the best explanation of the origin of the trouble. Some attributed the cause to the use of the city water; but under that supposition how could the fact that many of the cases occurred where the patients were using only well water, be explained? The water delivered by the water-works is brought from a mountain stream, seven miles distant from the city, and analyses made at that time showed it to be good and pure.

The fall of 1884 had been a mild one, but about the middle of December a change came, and we experienced some very cold weather. In the midst of this, and just before Christmas, the first cases commenced. These were rapidly followed by more, and it was a notable fact that the greater number of cases occurred among the better class of families, and soon the social aspect of the city was changed. In a short time the epidemic included among its victims so large a number of prominent people that all thoughts of social entertainments were put aside, and it was a common thing to hear the question "How many new cases to-day?" The epidemic continued through January and February and then began to subside, so that few if any new cases occurred after the middle of March. Why should such an epidemic show itself at this time of the year? If it had been at a season when decomposition was going on we need not have been so much surprised, but to have it occur at a time when we were having not only cold weather, but unusually cold, is rather out of the customary order of events. Since the subsidence of the epidemic, we have very few cases of continued fever, and these separated by intervals of greater or less extent.

PECULIARITIES IN A CASE OF OVARIOTOMY.

By John G. Orton, M. D., of Broome County.

November 18, 1886.

Mrs. I. B. S——; aged 38; married, but has never borne children; possessed of a good constitution; menstruation always regular. She observed an enlargement on the left side about four years since, which has increased quite rapidly during the past twelve months, extending well over to the right side, giving the abdomen nearly a uniform distention. Tapping had not been resorted to, and she had not experienced at any time pain, either in the tumor or any portion of the abdomen. She has been able to attend to her household duties up to the present time. Appetite good; bowels regular; sleeps well.

I give this history of the case as it was presented to me at the time she first called for consultation.

Ante-operation diagnosis: an unilocular ovarian cyst of left side, probably free from adhesions, pedicle of medium length. Advised extirpation.

Sept. 15, 1885, assisted by Drs. Comstock, Putnam, and others of Binghamton, and Dr. W. K. Birdsall of New York, who fortunately happened to be in our city, I commenced the operation by an incision four inches in length in the median line of the abdomen, extending from a point two inches below the umbilicus. The skin was very thin, adipose tissue a quarter of an inch thick; linea alba and transversalis fascia of medium character; peritonæum very thick and hard to cut, and firmly adherent to sac of the tumor. Puncturing this, we drained off about twenty-three pounds of a dark amber-colored gelatinous fluid. Here appeared a striking peculiarity: the peritonæal adhesions with the sac were so perfect and firm as to render a separation apparently impossible; and it was only by a patient effort that a beginning was finally made at the point of incision toward a separation of the two

membranes. Having accomplished this initiatory process, I found progress only to be made by carefully peeling off the sac like the rind from an orange. There were a few patches on the left side not adherent. The attachments to the peritonæal covering of the liver were quite firm, and also to the stomach. Considerable hæmorrhage followed these separations; but the adhesions to the bladder offered the greatest obstacle to a completion of the operation, and of course caused serious anxiety. While this slow process of separation took much valuable time, leaving the parts long exposed, yet the policy adopted was persistently pursued, believing it the only judicious course; and two hours of steady work resulted in overcoming the obstructions to the safe removal of a tumor weighing, with its contents, twenty-eight pounds.

The peculiarity of these adhesions consisted in their presence without any history whatever of previous inflammation; neither did the usual manual examination of the abdomen prior to the operation reveal any indications that such a condition existed. In no part were there any long, shred-like attachments, but invariably a close juxtaposition of the two membranes. The surfaces of the peritonæum, at the points of adhesions, had a granular appearance, and gave rise to free oozing of blood. It was not necessary to resort to ligature in any instance, as the application of sponges from hot carbolised water was found sufficient to arrest the bleeding. The pedicle was of medium length, about three inches broad, and was secured by stout silk ligatures in the usual way, and dropped into the abdomen.

Although antiseptic measures were employed, as far as scrupulous cleanliness and the use of 1 to 60 carbolic solution availed, yet the necessary long exposure of the peritonæal surface did not prove a detriment to a rapid and permanent recovery. I call attention to this peculiarity in order to simply say, that perhaps the "micro-organism epidemic" does not yet prevail extensively in Broome county. I do not, by any means, wish to be understood by this remark as ignoring or undervaluing the great advantages and possibilities to

modern surgery arising from the antiseptic treatment. But does not experience frequently warrant us in asking the question, May it not be just possible that a due regard for cleanliness is an equally important factor in the success of surgical operations? and is not that also an important safeguard against septic poisoning? It is better to bar the doors against the thief than to take the risk of catching him. I may say this much, that my own experience and observation in capital and minor operations, both prior to the introduction of antiseptics, so called, and since, convinces me that if cleanliness be "next to godliness," it is also very near toward securing success to the surgeon.

The progress of the case in its after treatment was characterized by only a moderate increase of the pulse and rise of temperature, no abdominal tympanites, and very little tenderness. The wound was closed by sutures, and without drainage-tube, believing that all the parts had been made free from blood and extraneous fluids. Not an untoward symptom appeared as my patient passed to convalescence. Menstruation came on the third day after the operation, a week in advance of its due time, but it only progressed after its usual character. Several weeks after the patient had returned to her home in an adjoining county, there appeared upon the right side, near the umbilicus, a tumor the size of a goose-egg, which finally pointed externally and discharged pus; then subsided, and healed completely. The patient has enjoyed good health during the past year. The origin of this abscess was probably traceable to the firm adhesions which were found in particular at that portion of the abdominal parietes, and which required almost unwarrantable efforts to detach. It is quite singular that it should have discharged externally, if it had such an origin, unless we refer it to the conservative tendency of nature's processes.

The question might very properly arise, Is the surgeon justified in making such extensive infractions of the peritonæal surface? The very satisfactory termination of the case I have just reported would seem to indicate that a proper

course was pursued in that particular instance; but what should be the limitations imposed upon the operator other than to act upon his own best judgment to meet the exigencies as they arise? We are certainly finding in these "latter days" that the peritonæal surface is tolerant of injury to a remarkable degree under certain conditions; and this fact affords to the ovariotomist an assuring confidence in his judicious efforts to overcome the complications and anomalies presented to him.

A REMARKABLE CASE OF OBSCURE TOXÆMIA.

By J. C. Hannan, M. D., of Rensselaer County.

November 18, 1886.

The subject of this paper is a married man, 50 years of age, and by occupation a practising physician in a country village of some 5,000 inhabitants. The place is pleasantly situated, but notwithstanding that it is a rapidly growing and prosperous community, it has not as yet any paved streets or system of sewerage. In the absence of public water-works, the inhabitants obtain their supply from wells and cisterns.

The patient was first taken sick about the 12th of November, 1884, with a slight cough, which continued to increase steadily, without any other symptoms tending to admonish him of impending danger; hence he paid little or no heed to it. Being a Fellow of the State Medical Association and an enthusiast in its cause, he started for New York to attend its first annual meeting, on the 17th of the same month, just five days from the date on which his cough began. While in New York he grew worse, so that after the morning session of the Association he was obliged to retire to his room for the balance of the day. He now began to feel uneasy sensations in his right side when he coughed, in what he supposed to be the lower lobe of the lung or its investments, and at a point in close relationship with the diaphragm. He continued in about the same condition, without any perceptible fever, during the three days of the meeting, and visited the islands in the East river on Friday with the rest of his brethren, hoping that the excursion on the water might be of some service to him. There was no material change, however, from the trip, and he left New York by the evening train, and arrived at his home next morning, much exhausted. His cough clung to him, and increased in severity as time passed on. The pain in the side increased also, and to such a degree that he was compelled to draw up his lower limbs in order to relax the abdominal muscles, and to place his fingers over the abdominal ring to avert the risk of hernia during the paroxysms of coughing, which usually lasted about five minutes, when he expectorated a large globular mass of muco-purulent matter, which afforded marked relief for the time being. This character of cough lasted some five or six weeks before it underwent any change, and then on a grad-

ually diminishing scale for about two weeks longer, the expectoration becoming more copious and more easily expelled. He now raised large quantities every day for three weeks longer, and continued to do so long after the cough had subsided altogether.

The train of symptoms next worthy of attention consisted of a sweating stage, which began on the ninth day of the disease, commencing at or about 11 P. M. every night, and continuing until 5 or 6 o'clock the next morning, when, in his own words, he was "literally drowned out." This sweating process went on steadily for six weeks, reducing the patient's strength to a very low and dangerous point. At the close of this period the perspiration from his body stopped, but his lower extremities, particularly from the knees downward, continued to pour out a profuse and clammy exudation for fully three months longer, until the unfortunate victim was reduced to a living skeleton.

His temperature all this time ranged from 97.5° to 101.5°, rising and falling between these two points until the end of the seventh week, when it adjusted itself to its normal state, and has there remained to the present date.

The pulse throughout was small, slow, and easily compressed. His attending physician found no irregularities in the mechanical action of the heart or arteries, save the feebleness just mentioned. The pulsations were uniform and regular, marking time like a clock, 60 beats to the minute, although occasionally the pendulum became weary, and dropped down to 50, 51, 52, and 53.

The head symptoms were not very important, except on one occasion when, in his convalescent state, he lost the power of coördination over his words and ideas; the mental faculties became mixed and confused to such an extent that he could not remember his own wife's name, the name of his physician, neighbor, or any other of his acquaintances. When he asked for a name, and the answer given was, for example, Skinner, it sounded to him like Fowler, Black like Brown, Cunningham like Birmingham, and so on. The more he tried to remember and be correct, the more confused and unsatisfactory seemed the effort. When this curious condition passed off, after lasting about three hours, he experienced a sensation of numbness in his right arm. He could move it in any direction he pleased, but it seemed to him as a shadow without substance. This strange feeling passed away in about three hours and did not again return, save a very slight approach to a similar sensation, which attacked the other arm just a week afterward, lasting about half a minute. He had more or less headache for the first three weeks or so, some attacks being quite severe, so that the nurse was obliged to place pads over the temporal arteries, and make compression by a stout bandage around the forehead. He at first attributed these headaches to the severe coughing, but was afterward convinced that they had a greater significance. They might have been due to the anæmia, to some reflex dis-

turbance from the nerve centres, or to the interference with general nutrition. On a few occasions the respirations went up to forty, but only for an hour or less at a time, and perhaps through nervousness.

The patient slept but little for the first five weeks, and that little consisted of short naps of from ten to fifteen minutes through the day. Various hypnotics were given with poor effect, owing, perhaps, to some idiosyncrasy or susceptibility of the stomach, so that they had to be abandoned altogether. The small quantity of food consumed during this time was taken under protest. The bowels were constipated throughout his whole illness, requiring strong cathartics to move them. The urine, during the active period of the disease, was scanty, with a strong ammoniacal odor and copious deposits of urates, etc.

He had no swelling of the glandular system, nor did he complain of sore throat. The mouth and tongue, however, presented a peculiar appearance. The latter was swollen and œdematous, covered with a thick, closely adherent, grayish coating, readily changing to a dark color, and the imprints of the teeth along its curved edge were well marked throughout his whole illness and long afterward. The entire cavity of the mouth exhibited strings of exuded fibrinous or other newly formed matter, adhering from the tongue to the arch of the mouth, over the tonsils, pharynx, and adjacent parts.

The respiratory murmur on the affected side was feeble, and interrupted by small friction sounds at or over the point of the supposed inflammation. The physical exploration would find the right lung at certain points dull on percussion one day, and perhaps perfectly resonant the next. The same local and shifting respiratory phenomena were discovered on auscultation, especially from the fifth to the tenth week of the disease. The fact that there was evident mobility of the walls of the chest, and that the patient could take full and deep inspirations, satisfied him that there were not many adhesions, nor much, if any, fluid in the pleural cavity. There might have been just enough plastic exudation thrown out to roughen the pleural surfaces, but hardly more than this. After the acute pain in the side had subsided, a soreness remained in that situation for six months, which, associated with constipation, dark-colored stools, etc., impressed him strongly with the notion that he had some disorder of the liver; but this organ having been thoroughly examined by his attending physicians, hepatic complications were excluded.

At the end of three and a half months the patient got out of bed, thinking that his troubles were all over, and moved about the house for two or three days, when he found his lower limbs swelling rapidly, causing him considerable pain from over-distention. This new condition of things aroused not a little fear of serious kidney disorder, and he again resumed his bed for a month longer, to rest quietly in an easy position and await farther results. He summoned his physician in fear and trembling to examine his heart and his urine once more; but nothing abnormal was found about the one or the

other beyond the cardiac weakness above alluded to. Still he remained in doubt, fearing degenerative pathological changes, and a specimen of the urine was sent to Dr. W. W. Seymour, of Troy, who made a careful chemical and microscopical examination of it, but found no abnormality. This satisfied the patient's mind; convalescence at once began to declare itself, and he improved a little every day. His appetite increased; his color improved; he slept well; passed a normal quantity of urine; and soon commenced to gain in flesh. He got down stairs again, and hobbled with uncertain gait from room to room, happy in his release from close confinement, but longing for wider freedom.

His physician ordered him to a milder climate, in order that a warmer atmosphere and moderate exercise might tone up his general system and aid in bringing about a speedy and healthy reaction. He went first to New York city, where he consulted some of the most eminent of the profession, no two of whom agreed as to the real nature of his sickness. He has once more entered upon the duties of his calling, although far from being well. The œdema still continues to annoy him, together with the local paralysis, both of which are gradually passing away, and he has been gaining strength day after day. Every morning, when he gets up, he complains of stiffness and soreness in his feet and legs. When he walks any distance he becomes quite lame, and gets short of breath on ascending an acclivity.

Such are the history and symptoms of the case under review, and such were also the history and nearly the symptoms in the case of another physician in the same neighborhood, who had been laid up in a like manner for nine months; and although his malady was not quite so severe, it debarred him, nevertheless, from practising his profession for nearly a year, and even now, at the expiration of two years, he is not entirely restored to his former health. We have had other cases similar to these in our village, modified in character, but presenting many of the main features just described.

I respectfully submit this interesting case for consideration, hoping that those of us who may be in doubt about the pathogeny and treatment of such a disease may be enlightened on the subject, and placed in a position to meet the requirements of similar examples whenever and wherever they present themselves. The questions which suggest themselves are,—

1. By what name shall we designate a malady having such peculiar and distinctive characters as those above recited, taking this as a typical case?

2. What was it that caused so great a disturbance in the economy of a previously healthy man?

3. Why should the local symptoms continue so long after convalescence was established?

4. What produced the paresis and œdema of the lower extremities?

5. Why should this patient, with a healthy pair of lungs previous to his illness, and with so little alteration afterward as far as a thorough physical examination could ascertain, cough almost constantly for five or six weeks, and raise such an enormous quantity of purulent matter?

6. What gave rise to the profuse and uniform sweating stage, which lasted some six weeks, beginning at a certain hour at night, and terminating at about a given hour in the morning?

7. Why should the lower extremities continue to emit such enormous quantities of effete moisture long after the trunk and upper extremities ceased to sweat?

8. Was it a constitutional disease?

9. Did the general condition produce the local changes, or the local beget the general condition?

Of several distinguished New York city physicians, to whom the history of the case was related as you have heard it, one called it acute bronchitis; another thought that it might have originated in arsenical poisoning from the Paris green used by farmers to destroy the potato bug; a third, and an eminent pathologist, that it was a case of diaphragmatic pleurisy; a fourth declared it to have been an acute pleurisy, which had passed into the chronic state, or with a complicating pneumonia, and ascribed the pathological condition remaining to extensive adhesions in the infra-mammary region; a fifth believed that the whole condition was the result of diphtheritic poisoning, which opinion was shared by Drs. Skinner of Hoosick Falls, Millard of North Adams, and the two Seymours of Troy. "Who shall decide when doctors disagree?"

It must be borne in mind that all of the physicians alluded to unanimously opined that the patient's vital organs were all

sound; and it is reasonable to accept this view, for otherwise he could scarcely have survived five months of active, depressing, and wasting disease. It may be proper, perhaps, to state in this connection, that he attended two patients with what he supposed to be diphtheria before he himself was taken sick. Both were full grown men, and were under his care for some nine or ten weeks, one of them recovering, the other dying of heart-clot. The latter lived in a common boarding-house, and no other member of the household was in any way affected; the former had his wife, mother, and children around him for weeks, and not one of them suffered any inconvenience from the association. The attending physician being a healthy man, as has been stated, why should he have been ensnared when all the rest escaped scot free?

The diagnosis of bronchitis seems very doubtful if we compare it with the definition of Bartholow, who describes it as a limited affection, located above the terminal tubes, and dependent upon a hyperæmia of the mucous membrane, which first suddenly suspends, and then after a time over-abundantly increases the secretion of mucus, producing a bronchorrhœa. Such a condition existed to some extent in the case before us, but the continual pain and soreness of which the patient complained during the course of his illness could not be thus explained, unless by extension of the process to the minute vessels, producing a capillary bronchitis or circumscribed broncho-pneumonia. Bronchitis is preceded by chilliness for several days previous to its complete invasion, and pneumonia by a severe rigor; neither of these occurred in this case. Bronchitis is not usually a very depressing disease, not lasting beyond from sixteen to twenty days, and not leaving any such sequelæ as were present in this case. In capillary bronchitis the range of fever is high, and is accompanied by great dyspnœa. Time will not permit me to prolong the comparison between these diseases and the one under consideration, but enough has been shown to exclude both. As to the far-fetched theory of arsenical poisoning by means of potatoes, its impossibility is evident from the fact that the patient did

not eat nearly as many of these vegetables as other members of his family who remained perfectly healthy. With all due respect to the distinguished specialist who assumed the existence of extensive adhesions, I am obliged to differ from his diagnosis in this instance, since, if the adhesions were as numerous and as firmly organised as he asserted, it seems to me that the patient would have been incapable of taking such deep inspirations as he continually did without difficulty. Moreover, if the hypothesis of extensive adhesions be correct, they must have resulted from an extensive inflammation of the serous membranes, and consequently have been a secondary affection; but the gentleman failed to name the primary disease which produced them. A pleuritis that would cause such a formidable trouble as this patient suffered from would certainly have been more than an ordinary case, and the effusion would be likely to correspond in extent with the gravity of the situation: such, however, was not the fact. The amount of effusion, if any at all, must have been very small, as the respiratory field was not narrowed in the least; nor was any mechanical difficulty experienced by the patient after the acute pain had passed away. Neither was there any displacement of the adjacent organs.

Was this a case of blood-poisoning by diphtheria, or some other septic influence analogous to it? One of our cleverest authors defines diphtheria as an acute contagious disease, beginning at the throat, and characterized by a local exudation, glandular enlargements, systemic poisoning, and having for its sequelæ various paralyses. Now this diphtheria, if it were diphtheria, did not begin at the throat, but with a cough; there was no swelling of the glands. I should not say that diphtheria prevailed as an epidemic in Hoosick Falls, but rather as endemic, more or less of the disease having been seen every year since my residence in the town. The young subjects whom I have attended invariably had swelling of the glands of the neck; the adult cases, on the contrary, with what I supposed to be the same disease, were exempt from such a complication. In the children who recovered from diphtheria

I discovered no visible paretic condition as a sequel; on the other hand, most, if not all, of the adults showed more or less relaxation of fibre, particularly in the muscles of locomotion, and the head and chest symptoms were most marked. I have been perplexed by a doubt whether the affection as exhibited in the child and in the adult was one and the same disease, acting differently, owing to the soft and delicate tissues of the one and the firmer and more compact organisation of the other.

One more consideration, and I shall have done: Was the case under review an aggravated form of an old and familiar disease, or a new one having a *materia morbosa* of its own? There are constant changes taking place in the material world,—continued growth and decay, interchanges of absorption and elimination, and peculiar transformations of vital phenomena; the action of chemical agents and re-agents on living structures producing new forms and combinations, some of them hitherto unknown or unappreciated. To decide this question, I call for a candid expression of your convictions, hoping, for the sake of science and the welfare of those who may be afflicted with a like malady, that a correct knowledge may be attained to meet and overcome the dangers to be feared when dealing with so formidable a disease as this proved itself to be.

DISCUSSION.

The President, Dr. E. M. Moore, reverting to the statement that the extraordinary perspiration was periodical in character, coming on and ceasing at certain hours, asked if the fluctuations of temperature bore a relation to special times of day.

Dr. Hannan replied that the temperature in the morning was usually low, and ran up to 100° in the afternoon; and, in response to farther questions from Dr. Moore, stated that the muco-purulent expectoration was worst in the morning and at 5 o'clock in the afternoon; that the aphasic attack, which lasted three hours and a half, began between 3 and 4 P. M.; and that the incoördination of the lower extremities was generally worse at night and on getting out of bed in the morning.

Dr. Moore said that there was a word, often much abused by medical men, but which expressed a reality about which people living in the western

and central parts of New York knew a great deal, and that word was Malaria. It was a good and proper word, representing the unknown quantity of the algebraist, which was a reality to be worked up to, although its full measure might not be known. There was a something which created all sorts of difficulties of a certain character, and which had its full manifestation in the quotidian and intermittent. The term had become a refuge for a great amount of ignorance, but it nevertheless indicates a reality. Italian physicians had invented it to express in a modest way their ignorance of an unknown trouble arising from "bad air." Dr. Moore taught his students that this something, whatever it might be, was capable of doing two things: it could mimic everything, and produce everything in the whole list of inflammatory diseases. It could be the cause of a brain affection; of a pneumonia; of a bronchitis; of anything and everything, down to the neuralgias and all sorts of nervous complications. He did not know any way to detect this terrible thing except upon the well known principle of periodicity, and when such periodicity was manifested all the way through, he recognised this insidious enemy. This, he thought, was the best explanation of the case recited, which he regarded as undoubtedly a double quotidian, an ailment difficult of diagnosis because the symptoms seem to continue throughout the twenty-four hours. In illustration, Dr. Moore cited the case of a lady who had suffered so severely from nasal catarrh as to be confined most of the time to her bed, the amount of defluxion from the nose being monstrous and continuing through the whole day and night. He had been at first puzzled to account for the wretched feelings of the patient; but while he was making a visit at 5 o'clock one afternoon, her daughter came in with four handkerchiefs, and said, "There, mother, you will want them now." In explanation, she informed him that at about 5 o'clock the discharge from the nose increased so that an extra supply of handkerchiefs was required. Acting on this hint, he administered the appropriate doses, and the trouble disappeared. The diagnosis hinged on being satisfied of the periodicity, and Dr. Hannan had described a marked condition of periodicity.

Dr. John Cronyn, of Erie County, thought that the explanation of Dr. Moore was nearer an answer to all the questions propounded than anything that he could say, and he would simply refer to a mistake too often made with regard to diphtheria. The writer of the paper had given a definition, according to some authorities, but the toxæmic condition described was not one peculiar to the previous existence of diphtheria. Too many believed, to the injury of their patients, that diphtheria was a local disease. Dr. Cronyn averred—and he knew as much about it as most people, if not a little more—that it was primarily a constitutional disease, and that its local manifestation in the throat or elsewhere followed, and that to deal with it as a local difficulty would be found to be time lost. He thought that a typical description of the manner of its occurrence would not be uninteresting. A scratch or a bite upon the finger, to which no attention was paid by

a physician; within forty-eight to seventy-two hours afterward, a general feeling of illness, pain in his head and back, and general malaise, but still moving about. On the fifth day after the bite upon his finger from a child suffering with diphtheria, a little pellicle made its appearance; and he was sick long before this membrane presented itself. He applied a little caustic potash to the exudation, and went on with his work, still feeling very badly, with loss of appetite. Two or three days afterward he found the pellicle again, and wiped it off; again in two days he took off the plaster, and again the pellicle was there. On the evening of that day he began to have sore throat, a little more than ten days from the inception of the original poison: he went to bed, where he stayed many a long day. He was doing very well under the care of two very excellent physicians; but the practice of applying something to the throat seemed consistent with fashion rather than necessity, and in a fell moment he allowed his throat to be thoroughly cauterised with nitro-muriatic acid, which, twenty odd years ago, was a very common remedy. His recovery was greatly retarded by the application. He made a solemn resolution that if he recovered no patient of his should ever undergo an application, and he had kept his word; because he believed that diphtheria was a constitutional disease, and could not be benefited by local medication. Occasion required that he should move out of his room a little too soon: he had a very serious case of compound fracture in the hospital. He got out of bed on Thursday, and went to the hospital on Saturday; and on the following Thursday he was called very early in the morning to attend a midwifery case. He walked to the place, and as he walked back, after the completion of the labor, he found that all the stones in the sidewalk seemed uneven; that his toes were striking against them as he went along. Two or three days before he had felt a strange sensation in the fingers and toes of both hands and feet, but did not think much of it until the stones of the pavement presented this apparent unevenness. He went to bed, and for four months did not leave it. He lost his voice. A very curious thing occurred in connection with his speech: no one could understand what he said; but by a singular accident he discovered that by twisting his head toward his left shoulder he spoke as plainly as if nothing were the matter, but on again turning it into the ordinary position he became unintelligible. This curious fact involved a question of coördination which was difficult to explain. Dr. Cronyn wished to emphasize his assertion that diphtheria is a constitutional disease primarily; that its secondary effects are manifested in the throat or elsewhere, where there is an exposed surface, the toxæmic effect depending upon the reflex influence or proximity of the poison in the throat. He therefore imagined that the toxæmic condition described by Dr. Hannan was not dependent upon diphtheria.

Dr. E. H. Hamill, of Suffolk county, said that it should not be forgotten that all animal life was marked by periodicity, which was manifested in breathing, digesting, sleeping, the pains of labor, and in everything we do, think,

or feel. There was no ground for the assumption that disease would destroy the tendency to periodical manifestations. In malarial disorders, he did not believe that the malaria caused the periodicity, but rather that it brought this periodicity into prominence. He was not disposed to accept the diagnosis of malaria, or any explanation which must hinge on one fact.

Dr. S. T. Clark, of Niagara county, wished to sustain the position of the President by the brief narration of a case: A man, aged about 75, was suddenly seized with spasmodic cough, occurring about five o'clock in the afternoon. The attack was short, but sufficiently agonizing to make him desire medical aid. When seen by Dr. Clark, at about six o'clock, the cough had ceased; it recurred, however, at about five o'clock in the morning and afternoon for some six weeks, with most intense anguish and profuse expectoration. He also had the aphasia spoken of by Dr. Hannan, occurring regularly in the afternoon, but not with the coughing paroxysm. It was not complete, but the patient could not coördinate his words. He would utter the words "Yes, yes," in a peculiar way, several times in his attempts to talk, and finally end up with "God damn." There had not been any diphtheritic infection in the region for some months. Sulphate of quinine did not affect the disorder, but it yielded to arsenite of quinine. After a profuse sweating stage was established, the trouble was controlled.

Dr. Caleb Green, of Cortland county, agreed with the former speakers as regarded the question of periodicity. There were some forms of chronic diarrhœa, coming on at a certain hour in the afternoon, which he had formerly treated on general principles, until he recognised their peculiar periodical character, when he attacked them with quinine and opium, giving from five to eight grains of the former and sometimes two grains of the latter an hour and a half or two hours before the expected diarrhœa; and this plan was usually efficacious after the second day, even in cases which had lasted for weeks. There was no clearly defined malaria in Dr. Green's neighborhood at the present time, but observing the element of periodicity in quite a variety of things, aside from neuralgia, he had treated them with quinine; and usually this, followed up for two or three days, had been sufficient for a cure.

Dr. H. D. Didama, of Onondaga county, was not quite satisfied with the malarial explanation. In most malarial attacks the temperature ran higher than in the case described, in which he understood that it was not above 101°, descending to below normal in the morning, which was unusual in malaria, wherein there was ordinarily a decided chill, a high fever reaching 104°, and then going down to normal, and not accompanied by the symptoms mentioned. Periodicity belonged to almost every disease in which disturbance of temperature existed—to diphtheria, pneumonia, etc. Aphasia was not met with in malaria, as a general rule. He suspected that Dr. Hannan was his own patient in this case, and surmised that he still had the incoördination of which he spoke—that, on getting out of bed he could not

manage his locomotion perfectly. Dr. Didama thought that if there were malaria in the case, there was something else. Diphtheria did produce trouble of the brain, weakness of the heart, and retardation of the pulse, which often went down to sixty, beating like a clock; it produced paresis of muscle. The expectoration of purulent matter might have come from diphtheria rather than from malaria. There were no manifestations in the throat, but there were a great many cases of diphtheria which did not manifest themselves in the throat. He did not, however, at all believe in the theory of his friend, Dr. Cronyn, that diphtheria was first a constitutional disease, although there might be all the constitutional symptoms without localisation in the throat. He was inclined to adopt the opinion that the disorder was diphtheritic; the symptoms corresponded with it, although he was willing to accept the amendment of Dr. Moore—who lived in a malarial clime—that there was a malarial element in it.

Dr. Green did not know of a more concentrated form of malaria than was to be found in Syracuse.

Dr. Hannan confessed that he was himself the subject of the paper which he had read, and added his conviction that none of the remedies applied in his case had anything to do with his recovery, which he regarded as the result of a struggle between nature and disease.

SACCULATION AND PERFORATION OF THE BLADDER AS CONSEQUENCES OF CHRONIC RETENTION OF URINE.

By J. W. S. Gouley, M. D., of New York County.

Read November 18, 1886.

In cases of chronic retention of urine the bladder may be distended in any or every direction except at the trigone, where, on account of its functions and relations, it retains its normal dimensions. In rare instances the increase in the size of the organ is alone in its vertical direction. Mr. John Adams has "known it to extend itself upwards in its long axis, its fundus reaching the umbilicus, whilst in other directions it has remained nearly of its natural size."[1] Civiale makes reference to a similar condition, and records an illustrative case. The increase is usually most marked in the lower fundus, which may exceed three times its normal capacity, so that when filled with urine it so impinges upon the rectum as to cause the most obstinate constipation. I have had in my possession several bladders (of old men), somewhat flattened antero-posteriorly, and much increased in lateral diameter at the lower half of the organ. Mr. Adams and others make mention of similar cases.

A photograph, kindly sent to me by the late Dr. George A. Otis, U. S. army, illustrates well the enormous increase of the lower fundus of the bladder in elderly men suffering from prostatic obstruction. I transcribe from the printed note which accompanies the photograph:

Hypertrophied Prostate Gland and Bladder, Containing Twelve Large Uric Acid Calculi.

This specimen was taken from a private patient, a native of Frederick, Maryland, who died Aug. 3, 1857. Beside the large concretions, the blad-

[1] "On the Anatomy and Diseases of the Prostate Gland," London, 1851, p. 73.

der contained numerous hemp-seed calculi, many of which were discharged during life. In 1849 more than three hundred were discharged through the fenestra of a very large catheter. The lobes of the prostate are much enlarged. On the right and middle lobes are several ulcers. The walls of the bladder are much thickened. The specimen measures as follows: From fundus to membranous portion of urethra six inches; across fundus and body of bladder, in which the calculi are contained, four and one eighth inches; from external wall of fundus to top of middle lobe, two inches and seven sixteenths; thickness of the walls of bladder, seven eighths of an inch; the width of the left lobe of enlarged prostate is one inch; that of the right lobe, two inches; the width of the divided and degenerated prostate is four inches and ten sixteenths.

The various morbid conditions just named, interesting in themselves and most of them of common occurrence, do not constitute sacculation, but simply dilatation, of the bladder. I have mentioned them for the purpose of drawing a sharp distinction between dilatation and sacculation of the bladder.

By sacculation of the bladder is meant the protrusion of its mucous and sub-mucous coats between bundles of muscular fibres so as to form sacs or herniæ of greater or less size, constricted at their vesical orifices. This pathological condition is of very frequent occurrence in elderly men. Nearly every writer upon prostatic and vesical diseases for the past hundred and fifty years has given examples of sacculation of the bladder; among them may be mentioned Heister, Parsons, Houstet, Chopart, Baillie, Everard Home, Wilson, Civiale, Gross, and others. But it was reserved for Dr. Mercier, of Paris, to interpret the phenomena of the more common form, which he began to study in the year 1835, and which he described in an able essay, published in the "Gazette Medicale," 1836, under the title of "Mémoire sur certaines perforations spontanées de la vessie non décrites jusqu'à ce jour." He was then a hospital interne.

Vesical sacculation occurs in two forms: 1. As a single pouch of from half an ounce to eight ounces, or even of much greater capacity, or as multiple diverticula, from three to six in number, sometimes communicating with each other. 2. As great numbers of small sacs containing from a few drops to a

drachm or two of urine, like so many herniæ of the mucous membrane thrust outwardly between columns of the muscular fibres.

Nearly all authors agree as to the nature of these vesical diverticula, which are the outcome of obstructed urination, either from urethral stricture, stone in the bladder, or enlargement of the prostate. In these circumstances the bladder becomes distended with urine; frequent efforts are made to expel this retained urine, and, as a consequence, the muscular coat is thickened; but this thickening being unequal in many cases, leaves certain weak spaces between the muscular bands. In some of these reticulations the mucous coat is gradually forced outward, and in the course of time—months or years—a diverticulum of greater or less size appears on the outside of the bladder, or there may be a multitude of such diverticula. Civiale mentions a case in which there were so many sacs visible on the outside of the bladder that it resembled a bunch of grapes.[1] The size of vesical pouches is in inverse ratio to their number. When very large, there is one, sometimes three or four besides, but smaller. In rare instances many small sacs coexist with one or two large pouches. Pouches are liable to occur in every part of the bladder, except the trigone. The most frequent seat of the large sacs seems to be the side (either the right or the left); next, the posterior and lower part; then the summit; and least of all, the anterior and lower part of the bladder.

In the year 1855 I dissected and made a dry preparation of a very interesting specimen of sacculated bladder, which I found at Bellevue hospital, and of which I could obtain no history. The specimen consisted of the bladder, with a short stump of the ureter on each side, and the prostate, the urethra having been cut close to the apex thereof. On each side of the bladder was a diverticulum somewhat rounded in shape, and communicating with it by a circular orifice with smooth edges, capable of admitting the index finger. The larger diverticulum was of greater size than the bladder, and

[1] Civiale, "Maladies des Org. Genit. Urin.," 1860, vol. 3, p. 7.

was on the left. The smaller was on the right side, and was equal to one third of the bladder in capacity. There were also three still smaller diverticula, which communicated with the largest at its lower and posterior portion. These small ones could contain each about half an ounce of fluid.

As vesical diverticula increase in size, the mucous and peritonæal coats remain stationary as far as thickness is concerned, but the layer of intervening connective tissue increases in thickness in proportion to the increase in size of the diverticulum; otherwise the sacs would burst long before they could attain the enormous size which some of them are reported to have reached. In my specimen the fibrous or middle coat of the sacs was not less than one eighth of an inch thick.

The case reported by Dr. Wm. Warren Greene, of Maine,[1] of which the following is an abstract, illustrates both the difficulty of diagnosis, and the enormous size which a vesical diverticulum may attain.

Dr. Greene was called, on Dec. 1, 1861, to see a man 84 years of age, who had been suffering from dysury for six or seven years, and who during these years had always been obliged to strain much in each act of urination. He had never been catheterized. He was suffering from epigastric pain and pressure, for which he consulted Dr. Greene. The family physician was not present at the examination of the case, but Dr. Greene learned that his diagnosis was hydatids of the liver. The abdomen was markedly enlarged, tense, and dull under percussion. The right iliac region was the most prominent, fluctuating, and tender to pressure. Digital exploration by the rectum discovered enlargement of the prostate. A gum catheter was introduced into the bladder, and only a teaspoonful of normal urine flowed. Dr. Greene's diagnosis was encysted liquid with partial bisection of the sac; but what was the exact nature or origin of the sac or of its contents, he could not decide. From the result of the catheterism he inferred that the cavity of the bladder was nearly

[1] "American Medical Times," vol. 4, March, 1862, p. 177.

obliterated by external pressure from the morbid growth. Death occurred on the 11th of December.

Autopsy.—There were many firm adhesions between the peritonæum and the walls of the cyst. The bladder was thickened, and communicated with an immense diverticulum which filled the rest of the abdominal cavity, crowding the liver and stomach completely out of sight. This sac contained a little more than a gallon of limpid urine. The thickening of the bladder was most marked in the posterior wall thereof, the maximum thickness being one inch and a quarter. The communication with the diverticulum was by an opening through the left side of the bladder, and four inches from its neck. This opening was about one inch and a half in diameter; its outline was regular, and its edges were smooth. The walls of the pouch were made up of a prolongation of the mucous and peritonæal tunics of the bladder, the muscular coat being absent. The prostate was as large as a medium-sized orange.

Dr. J. H. Hinton reported the pathological appearances of a case of sacculation of the bladder, in which no diagnosis had been made.[1] The following is an abstract of the report: The patient was 68 years of age, and had been suffering from dysury for five or six years. He had a protuberance in the right iliac fossa, eight inches in its longitudinal diameter, and four inches in its transverse diameter. The nature of this tumor was not ascertained.

At the autopsy the bladder was found bound down by adhesions. Communicating with its cavity were five diverticula which collectively made up the tumor noticed in the iliac region. The prostate was much enlarged. The bladder contained two quarts of urine. The pelvis of the left kidney was enormously dilated, as was also the ureter.

Heister saw a bladder with three sacs, one at the upper fundus, and one at each side, beside many others, smaller and scattered throughout the organ.

[1] "Medical Record," 1871, vol. v, p. 546.

Platner reported a case of sacculated bladder, in which there were thirty-nine sacs, each containing a calculus.

In a case of stone in the bladder, which required lithotomy (1860), I found the stone partially encysted in the anterior wall of the bladder, and was obliged to tear the edge of the sac and so widen its orifice before I could seize and extract the stone. In another case I found a stone, one inch and a half in diameter, in a sac of the posterior wall of the bladder, and before its extraction could be effected, it was absolutely necessary to enlarge the orifice of the sac. Both patients recovered.

The case of which the following is a short abstract was reported by Dr. Charles D. Smith,[1] and is given as an illustration of the occurrence of a single diverticulum at the summit of the bladder: The patient was 76 years of age, and for five or six years had been suffering from prostatic obstruction. Urination was difficult, frequent, and painful. An intra-abdominal tumor was discovered by Dr. Smith, midway between the umbilicus and pubis, conical in shape. Its apex was movable from side to side, more to the left; its base was fixed. The tumor was elastic, but painful when compressed. How long it had existed was not known, and its true character was not ascertained, though the doctor concluded that there was some connection between it and the bladder. It was of the same size after as before urinating. The patient died in about nine months after he was first seen by Dr. Smith.

Autopsy.—The prostate was found much enlarged, and obstructing the urethro-vesical orifice. The bladder was greatly dilated and hypertrophied, and contained about a quart of urine. At its summit the mucous and sub-mucous coats had been pushed through between the thickened bands of the muscular coat, and had formed a pouch or cyst which constituted the apex of the tumor felt through the walls of the abdomen. The ureters and pelves of the kidneys were much

[1] "N. Y. Journ. of Med.," New Series, 1853, vol. x, p. 359.

dilated. On March 4, 1886, I saw Dr. Smith, who told me that the pouch was of the size of an egg, that its walls were very thick, that its vesical orifice was very narrow, and that the urine it contained was putrid and of very offensive odor.

Vesical pouches, large or small, seldom completely empty themselves. The consequence of this is, that the urine which they contain becomes putrid and causes inflammation of their lining membrane, which may thus be destroyed at one or more points. The ulcerative process extends through the remaining tissues, which it finally perforates, and this putrid urine is poured into the surrounding connective tissue, giving rise to vast abscesses, and to death from pyæmia, or from exhaustion; or this urine makes its way into the peritonæal cavity; death occurring suddenly from collapse or from general peritonitis in the course of a few days. These pouches sometimes open into the colon (sigmoid flexure) and also into the rectum.

I have already made mention of another form of vesical sacs, but desire now to speak of them more extendedly. They are the small and multiple sacs spoken of as the second form. They are of great frequency, and are too often overlooked, even on post-mortem inspection of the bladder; but once well understood they cannot be mistaken. The profession is indebted to Dr. Mercier for their description, and for calling attention to their frequent termination in perforation of the bladder. In order to fairly place before the profession the views of Dr. Mercier[1] on this subject, I submit the following, which is abstracted from his paper of 1836: The muscular coat of the bladder consists of bands of fibres which cross each other in various directions, leaving here and there vacant spaces or intervals occupied only by mucous membrane and connective tissue between the peritonæal coat and the interior of the bladder. When, owing to any obstacle, the bladder contracts to expel the urine which cannot flow by the natural channel, its tendency is to escape where it finds the least resistance; therefore it is forced with the mucous membrane

[1] Mercier, *loc. cit.*

in these intervals between the muscular fibres, enlarging them, and producing diverticula of greater or less size, which are regarded as herniæ of the bladder. These vesical appendices have no muscular coat, therefore are deprived of contractility, and cannot expel the urine which they contain, and which is soon decomposed, and causes inflammation, ulceration, and finally perforation of their parietes.

But the sacs just described are only one of the forms met with. The more common are those small culs-de-sacs, which are so often found scattered upon the interior of the bladder, and which have a variable depth, from one to nine lines, a direction often perpendicular to the mucous surface, and as often very oblique in the thickness of the muscular coat, then between this and the peritonæal coat. Their vesical orifice is more or less rounded, with a diameter equal to that of a goose-quill. Their lining mucous membrane, continuous with that of the vesical cavity, is slightly thinner. Sometimes this mucous membrane is in direct contact with the peritonæum; sometimes it is separated therefrom by a variable thickness of muscular tissue. It is particularly on the sides of the bladder above the ureteric orifices and at the postero-inferior part that these small culs-de-sacs are observable. They occur, as do the other vesical pouches, in individuals affected with prolonged dysury, who often make strong efforts to urinate. Frequently, at the end of a certain time, the mucous membrane at the bottom of these alveoli becomes eroded, and extravasation of urine is the result. Frequent as is this occurrence of extravasation, Dr. Mercier had (in 1835) nowhere found an exact description of the morbid condition by which it is produced. He thought that the perforations were confounded with those produced by the prolonged retention of catheters in the bladder. In his paper of 1836 he records nine deaths from perforation of vesical alveoli, and gives the results of the carefully made autopsies.

In making the autopsy of an old man who had suffered for some years from dysury due to prostatic obstruction and to stone, and died with symptoms of pelvic peritonitis, I found

recent adhesions between the posterior part of the bladder and the rectum; on tearing which a quantity of fœtid pus escaped, and revealed a cavity of considerable size. This abscess communicated with a small diverticulum on the left side of the lower fundus of the bladder. There were besides a number of other alveoli in and near the lower fundus of this bladder. The immediate cause of death was pyæmia, owing to this abscess, though the kidneys were in an advanced stage of interstitial inflammation.

In another case there were, on the right side of the lower fundus, two peri-cystic abscesses, originating in small diverticula.

Diagnosis.

The diagnosis of vesical pouches is often extremely difficult, even under the most favorable circumstances, and, in many instances of large sacs, was never made during life. These have been mistaken for other diseases, and have either been treated expectantly, or have been punctured under the supposition that they were serous cysts or abscesses. A case reported by Dr. Alonzo Clark, in 1857,[1] is a fair illustration of some of the errors in diagnosis and treatment to which very large vesical pouches sometimes lead. Dr. Clark says that had his patient been of the other sex, he would have regarded the tumor as an ovarian cyst.

The following is an abstract of Dr. Clark's case: The patient was 68 years of age; had been in ill health for three years; had lost flesh and strength; and had been confined to the house for two or three months. The physical examination revealed an intra-abdominal tumor on the left side, extending from the lumbar region to the pelvis, which the doctor conjectured, after a prolonged exploration, was a serous cyst of the kidney, whose capacity was judged to be twelve pints or more. The question of puncturing the tumor arose, and was decided in the negative, inasmuch as there was a doubt in regard to its nature. The attending physi-

[1] "N. Y. Journal of Medicine," vol. iii, Third Series, 1857, pp. 86-90.

cian, however, did tap it, and withdrew seven pints of fluid.[1] After this, the patient was not able to urinate, while before he had done so without serious trouble. The physician then introduced a catheter, and drew off a gallon of bloody fluid. This was repeated every day until the death of the patient, ten days after the use of the trocar. The immediate causes of death were partly hæmorrhage, partly uræmia, and circulatory disturbance.

Autopsy.—The bladder was large, and distended with urine. Its muscular wall was enormously thickened. Attached to the left side of the bladder, communicating with it by a rounded opening about an inch in diameter, was a cyst, resembling an ovarian sac, which would hold a gallon or more. The tumor extended from the pelvis upward into the lumbar region above the kidney, crowding the intestines into the left hypochondriac region, and displacing the spleen. The sac, though not full, contained from three quarts to a gallon of bloody fluid. It was adherent, in nearly all its lower half, to the walls of the abdomen. The puncture made for tapping was above the adhesion, and seemed to be in a nest of blood-vessels. There was no extravasation of the contents of the cyst into the peritonæal cavity. The prostate was much enlarged in the central portion, causing an urethro-vesical barrier which had impeded urination. The kidneys were in consequence much diseased, especially the left, whose pelvis was greatly dilated; the left ureter was likewise dilated.

In a doubtful case like the above, the diagnosis might be cleared by aspirating two or three ounces of fluid from the sac, and subjecting this fluid to chemical analysis, and its sediment to microscopic examination.

There are, however, diagnostic signs, and if they be made use of properly, a correct diagnosis can, as a general rule, be arrived at, though these signs are few.

When a surgeon is called upon to treat a patient who, for any considerable length of time, has been suffering from dysury, owing to urethral stricture, stone in the bladder, or

[1] It does not appear that this fluid was analyzed.

enlargement of the prostate, he should direct his attention to the possible existence of vesical sacs, since obstructed urination is the essential and principal factor in the production of this pathological condition. If then, in such a case, he find a tumor, more or less tender to pressure, and fluctuating, in the hypogastric or iliac regions, he should proceed to examine the bladder with a catheter, by means of which he draws off the urine, which may be clear, and empties the bladder. If, in the course of a few minutes thereafter, the abdominal tumor, tense before, should collapse and diminish in size; and if he then reintroduce the catheter, and draw off a pint or more of urine, this urine perhaps being now purulent, he is forced to conclude that the tumor communicates with the bladder, and that it is therefore a diverticulum thereof which had contained the urine. But when the sac is not very large and is situated in the posterior part of the bladder, the only diagnostic sign, taken of course in conjunction with the history of the previous long standing dysury, is that which is made manifest by the aid of the catheter.

Mr. Guthrie suggested, as a diagnostic sign of sacculation, what he called the "fluttering blow of the bladder:" a sensation, he says, which is felt by the surgeon while he is drawing off the urine by means of a catheter, the end of the instrument being struck several times by the contracting bladder. This Mr. Guthrie ascribes to the flapping of the emptied sac upon the end of the catheter by a sort of convulsive contraction. I believe this sign to be entirely worthless as diagnostic of sacculation of the bladder, and that it should be rejected. The "fluttering blow" does exist, but it most certainly does not indicate sacculation. It is observed almost daily by surgeons who frequently catheterize patients that have no sacculation of the bladder. In nearly every case of irritable bladder this convulsive action occurs at the close of urination through the catheter, and sometimes gives much pain to the patient. It often misleads the surgeon, who begins to think that he has to deal with a case of vesical stone, and it is difficult for him to convince himself that there is no stone.

In the case of small diverticula, there are no diagnostic signs that can be absolutely relied upon. The supervention of peritonitis from perforation of the sacs is too often the only indication of their existence. A columnar bladder presumably contains alveoli, and the columns can be felt by means of a rectangular sound. From this circumstance, the surgeon may suspect the existence of alveoli.

Prognosis.

From a study of the pathological history of sacculation of the bladder, it will be naturally inferred that the prognosis is generally bad in the case of large saculi, and also in that of the alveoli described by Mercier; while it is more favorable in a fair proportion of cases of sacs containing stones.

Treatment.

Before pointing out the indications for treatment, I wish to say a word concerning prevention. Keeping in view the main cause of vesical sacculation, *i. e.*, obstruction to urination, the first preventive measure should be the removal of the obstruction,—dilatation of the urethra in case of stricture; the extraction of a stone, if the presence of stone be the cause; the incision or excision of the middle portion of the prostate, if hypertrophy of this part of the organ be the cause, or at least evacuative catheterism, if cutting operations be contra-indicated. But all this is not sufficient; for the obstruction to urination has perhaps already led to cystitis and dysury: therefore, not only should the stagnant and offending urine be withdrawn several times daily, but the cystitis treated by appropriate irrigations and by the exhibition of suitable internal medicines. If a patient who has suffered from dysury only a short time be so treated, he will probably never have sacculation of the bladder.

When the bladder has become sacculated, though there is no radical cure, the surgeon should use his best endeavors to check the progress of the disease. The prime indication of

treatment is that which was pointed out as the first preventive measure, *i. e.*, the removal of the cause of obstruction to urination; or if this be not possible, or if contra-indicated, to employ artificial means for the evacuation of the bladder; but beside emptying the bladder and diverticula, frequent irrigations should be used. If the bladder and sac be largely distended, they should not be precipitately emptied, owing to the liability of hæmorrhage from their walls. Dr. Clark's case is a striking example of this evil, resulting from suddenly withdrawing a large quantity of fluid from the distended sac. In such cases the surgeon should withdraw from the bladder only a pint of urine at a time, and throw in half a pint of warm water, increasing the density of the water by the addition (to the one half pint) of a drachm of glycerine and ten grains of biborate of soda or boracic acid, and repeating the process of drawing a pint of urine, and substituting the half-pint of borax solution every half hour until the bladder and sac are completely relieved of purulent urine and contain little if anything more than the borax solution, and are at the same time less distended. A snug, broad bandage should be applied to the abdomen to make suitable compression of the sac. Every day, for two or three weeks, this process should be repeated; but more fluid should be withdrawn each time until the sac is empty, or nearly so. It can scarcely be hoped to accomplish more than its slight diminution in capacity and the relief of the existing cystitis. Hence, the necessity of frequent evacuative catheterism and of irrigations of the bladder. The long standing hydraulic pressure upon the kidneys being thus slowly and gradually relieved, the life of the patient may be prolonged several months or even as many years, and his suffering greatly relieved.

It is very dangerous and therefore unwise to tap a much distended diverticulum of the bladder with an ordinary trocar, or with a hollow needle, followed by pneumatic aspiration. A correct appreciation can be formed of the ill effects of such a rash measure by considering for a moment the consequences of the sudden evacuation of an over-distended bladder. But

a case illustrative of the evil of puncturing a vesical sac has already been cited.

It has been proposed to puncture small sacs through the abdominal walls and also through the rectum. The hazards of such a procedure far overweigh its pretended advantages, which may very reasonably be questioned.

Among the details of treatment it may be mentioned that in endeavoring to free the sac or sacs from purulent urine it is necessary to frequently change the position of the patient from the right to the left and from the supine to the prone. No compression of the cyst should be made while it is in a state of distention. It is only after it has discharged a part of its contents into the bladder that compression of the sac (by a bandage) is safe and serviceable. The catheter should never be left in the bladder, but introduced at regular intervals to keep this viscus and the sac empty. After a few weeks one daily irrigation of the bladder will suffice to keep it clean.

The treatment in the case of the alveoli described by Dr. Mercier is practically the same as in that of large sacs, but care should be taken to avoid throwing in a large amount of fluid at a time. Two or three ounces slowly injected and allowed to run out of the catheter, repeating the process four or five times at each sitting, will be sufficient to wash away the purulent urine contained in the little sacs, and prevent erosion of their mucous membrane.

DISCUSSION ON ECLAMPSIA.

REMARKS INTRODUCTORY TO A DISCUSSION ON ECLAMPSIA.

By Wm. T. Lusk, M. D., of New York County.

November 18, 1886.

Though eclampsia is a comparatively rare event in pregnancy, labor, or in child-bed, the estimated frequency being in the neighborhood of one to five hundred, it is a visitation from which no busy practitioner is exempt, and against which one needs ever to be prepared and forearmed. But in spite of the active discussion of which it is the perennial subject, there are still many questions concerning its nature and treatment, in regard to which divergent opinions are entertained. It is hoped that a comparison of views held by the guests and Fellows of this Association may lead to some agreement as to a definite plan of procedure in meeting the emergencies of practice; for doubtless it is to halting action and wavering conduct that much of the ill success in the management of eclampsia is due.

In planning the discussion which is to follow the reading of this paper, the writer has thought it desirable that a good deal of attention should be bestowed upon theories as to origin of eclampsia. Specious views derived from inaccurate pathological notions are the prolific sources of indefensible forms of practice. It is especially necessary that the profession should keep pace with the progress of opinion concerning the relations of renal insufficiency to the eclamptic outbreak. Of course, the coincidence of the two affections in the great majority of cases admits of no question, but exactly to what

extent they stand to one another as cause and effect is still a matter of speculation.

The scientific evidence of the doctrine proclaimed by Frerichs in 1851, that eclampsia is due to uræmic intoxication, was furnished by Braun and Wieger in 1854. After the publication of Carl Braun's treatise upon midwifery in 1857, the remarkable chapter on eclampsia was translated into nearly every European language, and the evidence it contained, both clinical and pathological, was at once accepted as conclusive of the uræmic origin of puerperal convulsions.

Seyfert alone maintained toward the new teaching an attitude of bitter scepticism. From experiences gathered in the great maternity of Prague, he insisted that,—

I. Convulsions may occur without albuminuria.

II. That albuminuria is often the effect and not the cause of convulsions.

III. That in many fatal cases the kidney-lesions were absent, or wholly insignificant.

IV. That convulsions are rare in chronic Bright's disease, which had existed prior to pregnancy.

V. That in true uræmia, such as is of necessity produced by the suppression of urine, when, in uterine cancer, the ureters are invaded, convulsions do not occur.

It is necessary to recall this early stage of the controversy, because even at the present day the same facts are being freshly observed, and adduced as evidence of the flimsiness of the fabric which Frerichs and Braun constructed.

That convulsions may occur without albuminuria is established by a sufficient number of well observed histories. Recently Osthoff has reported a case of a patient who, in two successive confinements, had seven attacks of eclampsia, though in each occasion the urine was abundant, and contained neither albumen nor casts. Braun, however, in his first treatise, admitted the possibility of eclamptic convulsions due to purely reflex causes. These he regarded as attacks of acute epilepsy, and stated that they were rare and benign in character. My own experience would show that they are

indeed rare, for though most desirous of placing on record cases of this description, I am obliged in honesty to acknowledge that neither in hospital, in consultation, nor in private practice have I succeeded in discovering a single instance of the kind under consideration.

As regards the absence of albuminuria prior to the convulsions, it may be stated that since Bailly has shown that albuminuria in pregnant women may disappear for several hours and then reäppear once more, it is possible for an examination to be made during the period when the urine has ceased to be albuminous. But even admitting the fact, its importance is diminished by the consideration that at the present time little stress is laid upon the presence or absence of albuminuria, or even of demonstrated kidney lesions, but upon the sufficiency of the urinary secretion, the latter not being incompatible with the existence of even chronic Bright's disease. The suppression coincident with eclampsia is usually acute, due in a proportion of cases, as shown by Löhlein, to mechanical obstruction of the ureters, or, probably, in the larger number, to reflex circulatory changes effected by the direct connection, demonstrated by Frankenhaeuser to exist, by means of the sympathetic nerve, between the ganglia of the kidneys and the nerve filaments of the uterus.

The hypothesis of Cohnheim that the renal changes of pregnancy are due primarily to reflex contraction of the arterioles of the kidney, and that the albuminuria and the epithelial degeneration are secondary phenomena, possesses the advantage of being in accord with known facts. Experimentally, Litten has shown that similar results follow upon the temporary narrowing of the renal afferent vessels by means of ligatures.[1]

Flaishlen[2] found, in examining 1,000 cases of pregnancy, that albumen was present in twenty-six. In five of the cases the patients suffered from catarrh of the bladder, and in two

[1] Osthoff, "Beiträge zur Lehre von der Eclampsie und Uræmie," "Sammlung Klin. Vorträge," No. 266, p. 1911.

[2] Flaishlen, "Ueber Schwangerschafts und Geburts nieren," "Ztschr. f. Geb. und Gynaek.," vol. viii, p. 358.

chronic nephritis was diagnosed, leaving nineteen per thousand in which the albuminuria was dependent upon the pregnant state. Of 537 cases[1] (295 primiparæ, 242 multiparæ) observed during labor, or immediately after child-birth, albuminuria was present in 93 women, 73 of whom were primiparæ and only 20 multiparæ. As the estimated frequency of eclampsia is only one to five hundred cases of pregnancy and labor, the mere presence of albumen in the urine is not necessarily of grave prognostic significance. The real danger-signal is furnished by marked insufficiency of the renal secretion.

Admitting the coincidence of renal insufficiency and eclamptic convulsion in a preponderating number of cases, is it justifiable to conclude that eclampsia is the result of the accumulation of excrementitious products in the circulation? The commonly accepted theory that urea acts directly as a poison upon the motor centre, demonstrated by Nothnagel to be situated in the pons Varolii, leaves much for explanation. It is certainly difficult to understand upon such a theory why convulsions are absent in occlusion of the ureters from cancer. Cornil, subsequent to Seyfert, after a long series of observations upon uterine cancer, wrote,—"With these obstacles to the excretion of urine we expected uræmic symptoms to be manifested, but they were not. Although the attention of M. Charcot and myself was fixed upon this point, we never saw either the epileptiform convulsions or the coma peculiar to uræmic poisoning."

I can recall the case of a woman suffering from chronic Bright's disease, in whom the suppression of the urine was complete for several days previous to her death. There were no twitchings, and the mind remained clear, so that she was able to converse and join in singing at her bedside to within an hour of the end, death resulting finally from œdema of the lungs. I doubt not that many similar experiences could be related by each of the gentlemen here present. The abun-

[1] Flaishlen, "Ueber Schwangerschafts und Geburts nieren," "Ztschr. f. Geb. und Gynaek.," vol. iii, p. 394.

dance of such facts is with difficulty reconcilable with the chemical theory as to the origin of the convulsive seizure.

The doctrine of Frerichs, that urea is converted into carbonate of ammonia by means of a ferment developed in the blood, has long since been abandoned because lacking in clinical support; and that of Traube-Rosenstein, that the convulsions are due to acute anæmia of the brain, resulting from œdema and secondary compression of the vessels, has fared no better, owing to the rarity of œdema at post-mortem examinations.

The fact, however, of marked anæmia of the deeper layers of the brain structure was demonstrated by Angus McDonald in 1878. This he attributed to contraction of the arterioles, due to the irritation of the vaso-motor centre from excrementitious products retained in the circulation by the insufficiency of the kidneys. Küssmaul and Tenner had previously shown that convulsive twitchings occur in animals in consequence of cerebral anæmia artificially induced. The ingenious theory of McDonald, however, still leaves unexplained the absence of convulsions in cases where the tissues are necessarily loaded with urea, and their occurrence in instances where either no kidney lesions were present, or where the kidney and the cerebral symptoms were coincident.

It has, however, been customary to meet this difficulty by assuming that the eclamptic convulsions may proceed either from direct excitation of the nerve-centres by a poison circulating in the blood, or from peripheral irritation. The relative importance of the latter as a factor in the production of motor disturbances is evidenced by the vastly greater frequency with which uræmic convulsions occur during pregnancy, labor, and child-bed, as compared with those which take place in the various forms of nephritis in non-pregnant women.

As the histories of large fibromata and of ovarian growths are evidence that the difference is not due to the mere pressure of the gravid uterus, it is generally assumed that the special source of irritation in puerperal convulsions is derived

from uterine contractions, which the recent observations of Braxton Hicks and Frommel show are not confined to the time of actual labor, but occur spontaneously during the entire duration of pregnancy, and continue through the retrograde changes of the child-bed period. These considerations have recently led Osthoff[1] to conclude that all cases of eclampsia have equally a reflex origin. An irritation proceeding from the uterus may be transmitted through the sympathetic nerve to the kidneys alone, exciting contraction of the arterioles, or, where sufficiently intense, it may travel upward to the vaso-motor centre in the medulla oblongata and be followed by contraction of the arterioles of the entire body. Evidence of such general contraction is furnished by the high tension and sluggishness of the pulse. The resulting anæmia of the great nerve centres furnishes, according to the experiments of Küssmaul and Tenner, the occasion of the epileptiform attack.

The advantage of this formula as a working hypothesis is that it renders intelligible what the uræmic theory has failed to do, the occasional occurrence of eclampsia without kidney lesion, the frequent presence of kidney derangement without eclampsia, and the special gravity of eclampsia when combined with renal insufficiency. In questioning the connection between uræmia and convulsions, the danger to life from the retention in the circulation of excrementitious materials is in no wise disputed.

It is of special interest to ascertain how far such a modified standpoint will aid in a more precise formulation of therapeutical indications. *Cura probat morbum* is the test to which all theories must be ultimately subjected.

When convulsions occur during the progress of labor, the obvious indication is to employ measures calculated to accelerate the expulsion of the uterine contents. This is simply a natural deduction from the fact that the danger to the lives of both mother and child is proportioned to the duration of

[1] *Loc. cit.*

labor. Indeed, convulsions occurring first during the expulsive stage are rarely the source of much anxiety. When they take place during the stage of dilatation, the prognosis is much more unfavorable in primiparæ than in multiparæ. The relative infrequency of convulsions during pregnancy as compared with the parturient period is only explicable upon the hypothesis that the difference is due to the difference in the force and frequency of the uterine contractions after labor is fairly established. Up to this point there is no disagreement among authorities.

When, however, convulsions occur during pregnancy, or when symptoms forebode the outbreak of an eclamptic attack, the natural deduction from the foregoing facts would be to treat the convulsions *per se*, and to ward off labor, if possible, as a complication adding largely to the gravity of the patient's condition. Many excellent obstetricians, indeed, maintain in practice this logical attitude. But the logic of events shows that this passive and dilatory policy is fraught with an appalling sacrifice of life. When the susceptibility of the patient has once been demonstrated by the invasion of the great nerve centres, the existence of pregnancy is a continued source of danger. If, in point of fact, the alarming symptoms are temporarily allayed by suitable treatment, they rarely fail to recur. The occasional exceptions to this rule do not furnish just grounds for delay or hesitation. The reasonable course to pursue consists in first fixing the indications for action, and then employing all the resources of art in restricting the risks of induced labor within the limits of safety to the patient.

If, therefore, convulsions have already occurred, I believe the induction of labor to be imperative. Time is precious, and fortunately, in not a small number of cases, the irritation which proceeds from the uterus is weakened in intensity after the dilatation of the cervix and the escape of the amniotic fluid. But in counselling haste, I would at the same time warn against violence. Much of the ill-repute which premature labor enjoys as a therapeutical measure in eclampsia is

due to the employment of undue force, instead of means designed to promote normal processes.

The mere presence of albumen, or even of casts, in the urine does not necessarily call for obstetrical interference. They demand watchfulness on the part of the medical attendant, and a recourse to appropriate remedies to ward off dangerous symptoms. Cerebral symptoms are not a necessary sequence of kidney lesions. They are the exception and not the rule. Indeed, the kidney insufficiency which is coincident with grave cerebral disturbance is usually sudden in its development, and rarely to be anticipated by weekly examinations of the urinary secretion. Of much graver significance are headache, vertigo, flashes of light before the eyes, contracted pupils, amblyopia, amaurosis, nausea, vomiting, and an intermittent pulse. These betoken an invasion of the vaso-motor centre, and are signs of a peril which half-way measures are powerless to remove. The relief to be obtained by chloral and cathartics is usually of short duration, and we cannot go on giving chloral and cathartics to the end of gestation, nor are we sure that the first fortunate results can be reduplicated. Moreover, it is necessary to take cognisance of the well-being of the fœtus, which is threatened by the continued circulation of urea in the maternal blood. If the symptoms which give the first warning are of moderate intensity, no doubt it is often of service to precede the induction of labor by free purgation. In the temporary lull which follows, the risks of induced labor are greatly diminished; but even when therapeutical measures have failed, or the dangers are too pressing to admit of the delay involved in their employment, the induction of labor is still justifiable, for though it partake of the nature of a forlorn hope, it still enables us sometimes to save a life when death had otherwise become inevitable.

But hand and hand with measures employed to empty the uterus, it is necessary to call to our aid the therapeutical resources best calculated to diminish the violence of the so-called uræmic attack. The indications to be fulfilled are to lower

the arterial tension which imperils the heart by the increased labor thrown upon it, and to diminish the reflex irritability of the nervous system. Venesection answers the first requirement promptly, and rarely fails to afford temporary relief. Osthoff recommends to the same end a single injection of upward of a quarter of a grain of pilocarpine, and veratrum viride has been warmly praised by Fearn and Kenyon. The latter states that the "drug is quickly absorbed, and enters the circulation rapidly. It enters the vasa-vasorum, and through them impairs the sensibility of the vaso-motor centre, the blood vessels thus losing their tonicity and powers of contraction." The large doses ("15 minims to a teaspoonful every 5 to 10 minutes, until the pulse becomes soft, or vomiting has set in") have, I confess, deterred me from giving this agent a trial. Still I trust we have gentlemen here present who will be able to testify as to the safety of a remedy which possesses so many desirable qualities.

The action of cathartics is too slow when danger is pressing, but as an auxiliary measure, especially with a view to the ultimate elimination of urea, they may be usefully employed. Except in the case of purgatives, I have not thought it best to speak of remedies designed to eliminate urea. Neither sudorifics nor venesection are capable of appreciably lessening the amount of urea in the tissues, while digitalis and the diuretics have a tendency to increase the arterial tension. Their beneficial action is restricted to the conditions that prevail in the post-partum period, and even then they are inferior in efficacy to the hydragogue cathartics.

Chloroform, chloral, and morphia are our most valuable agents in diminishing reflex irritability. Usually I employ them in combination: thus, in case of convulsions, or during the induction of labor when cerebral symptoms are pronounced, I inject promptly one sixth to one fourth grain of morphia, and administer chloroform. When the patient has become anæsthetized, I give thirty grains of chloral by the rectum, and suspend the chloroform after the sedative effects of the chloral and morphia have been developed. Hot baths

have been warmly praised by Breus, but they are rarely available in private practice.

It will be interesting to learn from gentlemen in charge of large insane asylums whether eclampsia furnishes any considerable contingent to the permanent inmates of such institutions. Nothing is more common than the sequence of puerperal mania during convalescence from puerperal convulsions. It has been estimated that sixty per cent. of such cases end in recovery; but in my experience all instances of the kind have been temporary in character, and have furnished suitable material for home treatment.

QUESTION I.

DOES ECLAMPSIA EVER OCCUR WITHOUT RENAL COMPLICATIONS, AND WHAT IS THE CONNECTION BETWEEN URÆMIA AND THE ECLAMPTIC ATTACK?

Discussed by JAMES TYSON, M. D., of Pennsylvania.

For its proper answer, this inquiry is best divided into two First, Does eclampsia ever occur without renal complication? Second, What is the connection between uræmia and the eclamptic attack?

To the first question I answer, that while in a decided majority of cases eclampsia is the result of a renal complication of pregnancy, it must be admitted that in a few instances the convulsions are quite independent of such involvement. These cases are decidedly a minority, and include such as the following: A primipara, in whose urine no albumen nor casts were present previous to confinement, and in whom there was no dropsy, has a long and painful labor. The pains are extremely severe, but insufficient; and the nerves of the uterine tissues have been sorely compressed and bruised,—lashed, as it were, into a state of fury. Coincidently, the nervous centres have been so irritated and become so irritable, that they are not capable of regulating the motions which it is their business to control. Finally, all regulating power of those centres is lost, and the convulsion results. The condition is exactly analogous to that of the convulsed teething child, or the child who has swallowed some indigestible substance. Such convulsions are not uræmic, but reflex; and it is not impossible also that they may be occasioned by an emotion, such as fright. They rarely occur more than once or twice, and are as rarely fatal. At the same time, as it is not impossible for reflex convulsions under other circumstances to be

fatal, so they may also under these. While the older observers reported numerous cases as occurring independent of renal complication, which, in consequence of inaccurate methods of investigation, may be regarded as doubtful, such cases as that outlined here have occurred under the observation of trained modern observers, and the absence of kidney disease been confirmed by autopsy. It is plain, also, in view of the fact that neither albumen nor casts are essential to a diagnosis of Bright's disease, that without an autopsy no negative conclusion dare be drawn. To illustrate by a single modern instance: Within the last few months, Leyden, in Berlin, examined the kidneys from a fatal case of eclampsia, and found nothing abnormal.[1] In illustration of an observation which I regard as doubtful, and therefore of no value in deciding the question, I would refer to one by Ingerslev, quoted by Schroeder. Ingerslev is said to have collected 106 cases of eclampsia, in none of which, it is claimed, was there albumen, and in all of which the kidneys were normal.

A few cases of convulsions during childbirth may be the result of epilepsy to which the patient was previously subject, and hysteroidal convulsions may also occur. Indeed, any cause which can produce convulsions in the non-puerperal state may produce them during labor. Thus, they may be due to meningitis, apoplexy, or a brain tumor, or even sudden loss of blood. These cannot, however, be regarded as true puerperal convulsions, as they do not depend upon the puerperal state. With these exceptions, then, all cases of eclampsia are renal in their origin, and due to uræmia;—and thus I would answer the second part of the inquiry.

It is impossible in a paper of the length prescribed to do more than give, in a general way, my reasons for regarding a decided majority of cases of puerperal convulsions as due to uræmia, but I would refer those who care to look into the subject more deeply to a paper on "The Causal Lesions of Puerperal Convulsions," prepared by myself for the Patho-

[1] "Ueber Hydrops und Albuminurie der Schwangeren," "Zeitschrift für Klinische Medicin," Bd. II, Heft 1, 1886.

logical Society of Philadelphia, in April, 1878. In this paper the whole ground is gone over, from the date, in 1840, when Rayer first announced, in his work on "Diseases of the Kidney," that he had observed albuminous nephritis in a pregnant woman, down to the date of the paper. In the course of its preparation a very large number of authorities were carefully examined, from which it appeared to me evident, first, that the weight of authority favored decidedly the view that the convulsions of childbirth are due to Bright's disease. By the weight of authority, I mean such names as that of Rayer himself, his pupil Cohn, Lever, the elder Simpson, Devilliers, Regnault, Garrod, Carl and Gustav Braun, Litzmann, Krassing, Elliot, Bailey, Leishman, Johnson, Peter, Dickinson, Scanzoni, Bartels, Gaillard Thomas, Barker, Ellwood Wilson, Albert H. Smith, Parvin, Lusk, and others.

Second, it was also noted that, with the growth of our knowledge and of accuracy of investigation, the number of those who ascribe puerperal convulsions to other causes than uræmia has rapidly diminished, until, at the present day, few authoritative observers are found among them.

Farthermore, a continued examination of the subject satisfies me that the number of cases in which albuminuria and tube-casts are found, either before or after labor, or both, has greatly increased with the growth of accurate methods of examination and of careful testing; and there can be no possible doubt that many reports by the older observers, in which the urine was declared free from albumen and casts, and in which the kidneys were reported normal, were erroneous.

That the absence of dropsy, albumen, and casts, or even all of these, dare not be regarded as necessarily excluding the possibility of a renal complication, is justified by observations as far back as 1859, when Krassing reported nineteen cases of eclampsia occurring in the clinic of Braun of Vienna, in all of which, save one, there was reason for believing Bright's disease present; and in one case, with sixty paroxysms, no albumen was found in the urine. It is needless to say here that recent studies go more and more to show that neither

albumen, casts, nor dropsy is necessary to ensure the presence of Bright's disease. What has been heretofore regarded as one of the most formidable objections to the general acceptance of the view of the renal origin of eclampsia, is thus rendered nugatory, unless sustained by the results of autopsy.

Another circumstance which has been upheld as being in the way of ascribing puerperal convulsions to uræmia is the disproportionately large number of instances of convulsions as compared with other cases of Bright's disease. Thus, it is said that convulsions occur in one fourth[1] of the cases of albuminuria of pregnancy, which is a much greater proportion than is found in albuminuria from other causes. But when we recall the exalted susceptibility of the nervous system in pregnancy and labor, and the suddenness with which the renal lesions are established, it need not be a matter of surprise that lighter grades of uræmia result in convulsions. We constantly, in connection with disease, meet instances of its various effects upon function according as the diseased state is suddenly or gradually established, and nowhere more strikingly than in the nervous system. Thus it is well known that brain lesions gradually established may advance to an extreme degree without producing any symptoms whatever, while slight but sudden alterations in structure are promptly followed by active and alarming symptoms.

Another objection sometimes adduced against the uræmic origin of eclampsia is the difference in the methods of successful treatment of the convulsions of childbirth and of Bright's disease, the former being, by almost universal acknowledgment, best treated by bleeding, while blood-letting is rarely employed in Bright's disease. But I have taken opportunity, on more than one occasion, to say, what I believe, that the convulsions of Bright's disease would be more promptly arrested if bleeding were more frequently used for them. The bleeding substitutes the deficient action of the kidneys, and removes the urea, or what it may be, which is responsible for

[1] All observations do not allow this proportion. Thus, Rosensheim says that only one out of every eight cases of albuminuria has convulsions.

uræmia, from the system. Bleeding acts more efficiently and promptly in the nephritis of puerperal eclampsia, because in the puerperal condition the kidney is less damaged, and with the removal of the cause is enabled to return rapidly to its original state, and resume its function; while in the nephritis of scarlatina, for instance, by the time the uræmic condition sets in, the organ is too much diseased to resume its normal anatomy and function.

While the theory of the reflex origin of puerperal convulsions may be traced as far back as the time of Lawrence Joubert, who wrote "*De Convulsionis Essentia et Causis*," in 1500, it is well known that most of the older writers with whom we are familiar, such as Scott, Smellie, Denman, and Foster, in the latter part of the last century, and Hamilton, Blundell, Davis, Burns, Dewees, Ramsbotham, Meigs, and Hodge, in the early part of the present, ascribed puerperal convulsions to pressure due to congestion and a loaded state of the blood-vessels of the brain, or, as it was also called, a "determination" or "rush" of blood to the head. It is probable that the prompt affect of bleeding in eclampsia did much to establish this view, at one time so generally held; but with this exception, there was really very little to sustain it, even before the more accurate knowledge of the present day with regard to Bright's disease and its dangerous complication—uræmia. In the light of this knowledge, however, and of the revelations made by autopsies in cases of sudden deaths under like circumstances, there remains almost nothing to sustain it. Straining at stool, which is comparable to straining in childbed, although never followed by convulsions, is not infrequently followed by sudden death; and it is not unreasonable to expect that autopsies should reveal some information bearing upon the subject; but in these autopsies, congestion of the brain is never found. Apoplexy is sometimes present when vessels are previously atheromotous, but never otherwise. Quite frequently such sudden death is found due to rupture of an aorta, also previously diseased, the strain being apparently exerted most forcibly just without the

semilunar valves, so that the blood is found in the pericardium. It has been my privilege to see a surprising number of these cases since my friend and assistant, Dr. Henry F. Formad, has been coroner's physician in Philadelphia.

In like manner, it is not impossible that autopsies in cases of puerperal eclampsia may occasionally discover ruptured vessels, but never unless there has been previous disease of the vessel walls. I cannot, at present, recall the report of a single autopsy in which congestion of the brain or apoplexy was found. On the other hand, anæmia is a not infrequent symptom, as it is also in the convulsions of Bright's disease uncomplicated with pregnancy.

Unfortunately, it is impossible to obtain any evidence from the character of the convulsion, for the epileptiform convulsion, under which head, as distinguished from the hysteroidal and tetanic, the uræmic convulsion is classed, may be due to a variety of causes, including idiopathic epilepsy, peripheral irritations, cardiac failure, organic disease of the brain, including tumors and even cerebral hæmorrhage; also, to the action of certain poisons, and to hysteria, as well as to uræmia. The only proof, therefore, which can be relied upon is the evidence of the presence of renal disease before or after the convulsion, or in case of its absence, at the autopsy. And when it is remembered in what a large number of cases the first named evidence is found, and that autopsies furnish a number more, the assumption that true puerperal eclampsia is due to any other cause than uræmia seems to me totally unwarranted.

QUESTION II.

SHOULD LABOR BE INDUCED IN CASE OF THE OCCURRENCE OF ECLAMPSIA DURING PREGNANCY; AND UNDER WHAT CIRCUMSTANCES, IN CASE OF THREATENED ECLAMPSIA, SHOULD PREMATURE LABOR BE INDUCED AS A PROPHYLATIC MEASURE?

Discussed by

ISAAC E. TAYLOR, M. D., of New York County.
T. GAILLARD THOMAS, M. D., of New York County.

DR. ISAAC E. TAYLOR.

The few minutes, Mr. President, which are allotted to the speaker who is to respond to the second question (which is purely and simply a practical one), necessarily constrain him to condense as much as possible the opinions he would desire to express, and the reasons why he would advocate the propriety of inducing premature labor in cases of threatened or actual eclampsia, although these views may be in accordance with those entertained by other gentlemen present.

The main question, Mr. President, admits of being divided into two parts. I will refer, first, to the latter clause of the principal question, which is, "Under what circumstances, in case of threatened eclampsia, should premature labor be induced as a prophylactic measure?" reserving the first part of the question for a few practical illustrations as evidences of the necessity deduced from the remarks I propose making.

No subject in the obstetrical branch of our profession claims so much serious thought, investigation, and study as cases of threatened or actual eclampsia; for there are two lives involved, and to use every resource and means to save

both, or even one of them, if possible, under certain exigencies, becomes an imperative and conscientious duty. Objections, I am fully aware, are held by many gentlemen in our profession, of the highest position and established reputation, who are opposed to the operation, believing that other resources are adequate to prevent or overcome the eclampsia, and that the patient will, or may, pass on to the full term of labor and be safely delivered.

Tyler Smith is very emphatic in his declaration on this point. He says,—"I have never met with a case that resisted treatment, unless it had been neglected until the end of gestation." Gooch has directed us "to attend to the convulsion, and leave the labor entirely alone." Schroeder holds that, especially, no kind of obstetrical manipulation is required for the safety of the mother; but he also says, "it is sometimes advisable to hasten" the delivery.

Personally, it appears to myself almost impossible to conceive that there could be any valid objection where the circumstances are of a critical nature, even when occurring during the early stage of pregnancy, involving not only the life of the mother, but her future prospects, and especially those of the child; or at a later period, when the eclampsia comes on in some cases so instantaneously and unexpectedly that death ensues in a very short time.

The legal enactment is that premature labor should not be performed except for the preservation of the life of the mother, which certainly transcends that of the child; still the life of the child is of some value, and it is very desirable to save it. Independent of this enactment, the scientific and practical view resulting from experience, and an experience which is based on faithful and close observation, that sanctions and fortifies the performance of an operation by a conscientious and judicious propriety, becomes obligatory.

In the early months of gestation the symptoms of puerperal albuminuria are by no means uniform and clearly characteristic, although in some instances traces of albumen may exist in the urine. The first symptoms are those which are

most generally noticed as belonging to the head and face, with which we are all of us so cognisant that I need only to refer to one or two of them at this time.

Impairment of the vision, in its different aspects, is one of the earliest symptoms, associated as it is with some disturbance of the head. Headache and the defective vision are frequently considered of little value, and may be, and are, overlooked until the pregnancy is farther advanced, when they become quite prominent symptoms, associated, it may be, with slight œdema of the face, hands, and feet. Anasarca of the feet is sometimes noticed, but at other times it does not exist, even up to the time of labor. Blot has stated that out of forty-one cases, twenty-three had no œdema.

Reliance is most usually placed on the recognition of albumen, and specific gravity, which is higher or lower according to the peculiar state of the general system at the time. When albumen is discovered, it is presumed to be tolerably certain that an incipient affection of the kidney is impending, if not really existing. This, however, in puerperal albuminuria, may prove to be only temporary, or it may be of a recurrent nature, or become of a permanent character and continue till the end of pregnancy, and might establish a chronic disease of the kidney. Most generally it proves only temporary, and leaves no disease of the renal organs.

Albumen is one of the physiological conditions of the pregnant woman, but when it is exaggerated may, and does, become pathological, and in some cases quite early, the early symptoms having been recognised at the second, third, and fourth month; it is, however, more frequent at the fourth and fifth month, and not infrequently proves fatal to the child, the mother being safely delivered. Puerperal albuminuria existing in the early months, whether primary or secondary, tends frequently to abortion or premature labor.

Before I refer to the practical part of the question by citing a few condensed cases (as the time will not permit of my reading the details of these), I wish to offer only one or two reasons why the operation should be instituted, at any time

during the period of gestation, from the standpoint I shall adduce.

Pregnancy is a physiological condition. During pregnancy, it is recognised that various and decided pathological changes take place, not only in one, but in different organs, and among these none are more generally met with than eclamptic convulsions. Should eclampsia not occur, other important and unfavorable diseases will supervene in consequence.

A pregnant woman in whom no albumen is discovered in the urine during the whole period of gestation, is usually considered as almost certainly exempt from having an attack of eclampsia at the time of her labor or afterward, unless the convulsion is the result of some other cause, depending on reflex action.

When albumen is found, it is presumptive evidence most generally that a renal hyperæmia exists, or that an important pathological change of the circulating fluid has been produced in the economy of gestation.

The function of secretion takes place, "first of all," in the circulation, and beginning, as it does, in all parts of the economy, by the admixture of various pathological and heterogeneous elements, including urea and other allied substances, it terminates in the kidney by the elimination from the circulating fluid of these effete and noxious elements. Secretion is recognised, therefore, as a general and as a local condition. The function is one thing, and the emunctory organ is another, in its action.

The function being the first of all that is chiefly affected, then the integrity of one or more organs of the body will become individually or simultaneously invaded, and in time perceptible changes are evident in one way or another, and even in loss of the life of the child, before any evidence of eclampsia is manifested. Assimilation is so active in the fœtus that its death could only be explained by presuming it to be through a material change of a pathological nature.

The kidney is looked upon by many as the *fons et origo* of the cause of the eclampsia, by one of the forms of nephritis,

whatever form it may be. Accepting this view, the important *function* of secretion in the circulation must be entirely set aside; but to go still farther, and consider that the pathological condition is first in the renal organ, is also to ignore a great variety of very important causes which have a more decided, and equally powerful and corresponding, influence.

Pressure by the enlarged uterus on the renal veins, or, as others have affirmed lately, on the ureters, is viewed as the chief and principal mechanical cause. This view could not obtain in the early months, as the earliest period at which pressure could perchance be effective (and to this I give little or no credence) would be at the sixth month; and this pressure continues till the commencement of labor, and during the process of labor.

During gestation, as we all know, there is most generally a tendency to a diminution of the blood-corpuscles, as well as a reduction, very unfortunately, of the albumen in the circulating fluid (which might possibly at last terminate in some renal disease). It is this physiologico-pathological condition which tends to cause albumen so frequently.

It is by no means easy—nay, it would seem almost impossible—to ascertain when that pathological change has occurred. This, however, may be aided either by an active or a passive congestion, to which not only the kidney, but the other organs, are exposed during pregnancy, from the early to a more advanced stage, and more especially at the time of labor. If the alteration of the blood is only moderate, there would be an exemption from eclampsia; should the modification be very decided, eclampsia will be most likely to declare itself, and so forcibly and suddenly in some cases that death in a few moments will follow, whether it is at the third or fourth month of pregnancy, at term, or after labor. If eclampsia does not occur, we may have instead œdema of the brain, melancholia, mania, pneumonia, acute bronchorrhœa, peritonitis, or ischuria renalis, and sometimes an alternation of these affections, as we have seen now and then, with death ensuing.

It is the opinion of Schroeder, and still later that of Braxton Hicks, that when eclampsia occurs at the time of labor, the albumen which was not found in the urine before the labor, but was afterward, was in a great measure, if not solely, owing to the eclampsia producing an "acute desquamative nephritis." This view may possess apparent correctness, but we are not to forget that the pathological disease existed previously in the circulating fluid before the attack, the eclampsia being the exciting cause, by creating a diseased condition of the emunctory organ. The disease of the kidney becomes, therefore, a secondary consideration. It is not necessary that eclampsia should prevail to demonstrate the uræmic state of the system; for there are cases which are seen, and to some of which I will refer, where albumen was not recognised, although many tests of the urine had been made, until the eclampsia burst out; and others, where it was not seen till after the labor, the delivery terminating unfavorably afterward by one or other of the complications referred to. Examination of the urine is deemed at the present day an absolute duty, and to overlook it would be considered as a great omission on the part of the physician; equally important is it to institute an obstetrical examination during pregnancy, when puerperal albuminuria is suspected or exists, to realise whether the child is living or not. If dead, with such a pathological state of the system also, it would necessitate the propriety of inducing labor, irrespective of what period of gestation exists, to save the life of the mother which is threatened, and before the occurrence of eclampsia, or other serious complications.

The death of the child occurs not infrequently before artificial aid is rendered, and sometimes nature steps in to deplete the uterus and save the life of the mother. This lesson from nature conveys an important fact, and serves as one of the arguments that premature labor is not only called for under certain exigencies during pregnancy, but is especially demanded when eclampsia takes place.

I would desire to be understood from the remarks that I

have made, that I do not ignore the value and the necessity of other means which are or should be resorted to, and which prove successful under more favorable circumstances, which are recognised, although I do not think that they are frequent.

In the relation of the cases which I refer to, I will divide them into four sections:

1. Those cases which we see during early pregnancy,—the child being dead, and the mother saved.

2. Those from the seventh month to the end of gestation,—the mother's and child's lives seriously involved, or both dead.

3. Those cases taking place where there is no albumen found in the urine till the labor has commenced or terminated.

4. Those cases where no eclampsia has occurred, but where the mother dies by other fatal and important disease (consequent on the pathological change in the blood), and albumen is not found till after delivery.

Condensed Cases.

Case I. Mrs. T.; fourth pregnancy; aged 35. July 10, 1862. Amaurosis uræmica at 2 months; recurrent at 4 months; recurrent at 7 months. Premature labor advised; dissent on the part of the mother. Natural premature labor; child dead. Mother recovered perfectly, and this was her last pregnancy.

Case II. Mrs. M.; 4½ months; primipara; aged 23. March 1, 1876. Almost total blindness. In two weeks patient improved so much under treatment as to see across the room. Slight œdema of face; no anasarca. At 5½ months, consultation with Dr. F. Barker, respecting premature labor, as the child was dead. Dissent to both questions. Premature labor naturally on the following day; child dead some time. Mrs. M., in the course of eight months, showed decided disease of the kidney, and in the spring of 1877 died of œdema of the brain and pleuritic effusion. Drs. Flint and Clark in attendance during the last few days.

Case III. Mrs. S. First pregnancy. May, 1874, had

violent convulsion at the time of labor, leaving her hemiplegic. Seen in consultation with Drs. J. J. Crane and White. Equally faulty pelvis. Version had been performed when I saw her; embryotomy to deliver the after-coming head. Recovered in three weeks.

Second pregnancy. May 24, 1875. Six and a half months advanced in pregnancy. Slight convulsions; urine highly charged with albumen. Premature labor induced. Child living, but died in two weeks.

Third pregnancy. Feb. 15, 1880. Was under my own charge. Nothing transpired but what was natural, not only during the pregnancy, but also at the delivery. Premature labor induced for the faulty pelvis at the eighth month; child living.

Fourth pregnancy. May 17, 1884. Everything progressing favorably and naturally till 7¾ months, when albumen was discovered in the urine for the first time, although the water was examined frequently; no clear evidence from any external signs. I saw her at 11 A. M.; she was bright and cheerful, and no symptom pointed to puerperal albuminuria except the examination of the urine. I proposed calling in the evening of May 17, to bring on the labor for the deformity of the pelvis. At 3 P. M., of the same day, was summoned to see Mrs. S. Face slightly puffy; sight impaired, but tolerably good. While chatting with her at the window, her speech became thick; the tongue could scarcely be protruded; and in an instant Mrs. S. was convulsed, the seizure lasting a few minutes, and leaving her hemiplegic. Dr. J. Sydney Crane was requested to join me. Labor was brought on by Barnes's dilators; version performed by two fingers; patient delivered in three hours. Mrs. S. never recovered from her unconsciousness and coma, and died on the second morning afterward.

Case IV. Mrs. V. S. Third pregnancy. May 19, 1852. Five and a half months gone in pregnancy. Appeared to be very well, though having moderate headache. No symptom of an external character prominent. On May 18, 1852, the

urine was first noticed to be slightly albuminous; specific gravity, 1014. On the 19th, I was called to see her immediately, and, although living but a short distance from my house, by the time I arrived she was dead.

Case V. Mrs. L. S.; primipara; aged 28. Eight and one half months gone in gestation. I saw her in consultation with Dr. Oliver White, November, 1870. Mrs. S. was in severe uræmic convulsions, and unconscious; child living; cervix as long as natural; no dilatation. Barnes's dilators used. In one hour instrumental delivery performed, with child living. Mrs. S. recovered in one month.

Second labor. 1872. I was in attendance. Nothing occurred but what was natural during the pregnancy and the delivery. Child living.

Third labor. May 1, 1875. Seven months advanced. At 6¾ months patient showed symptoms of albuminuria by swelling of the face, indistinct vision, headache, and some puffing of the extremities. Some albumen in the water; specific gravity, 1016. While under treatment, on the morning of May 23, I was summoned to see Mrs. S., being in convulsions. On my way to her house met Dr. C. C. Lee, and took him with me; and Dr. A. A. Smith, to whom I had sent a note, shortly after came in. Convulsions and unconsciousness continued when I arrived. Premature labor adopted. Barnes's dilators used, and when the cervix was dilated to the size of half a dollar, version was performed by the two fingers; partial placenta prævia existing. The child was born living. The mother, after the delivery, on the second morning, had symptoms of paroxysmal hæmatinuria, which were recovered from in two weeks; the patient eventually did well, and continued in good health.

Case VI. Met Dr. Varick, December, 1885, in Jersey City, in the case of Mrs. M., 7½ months pregnant. No decided evidence of uræmia except by the urine, which was highly albuminous. Premature labor advised by Dr. V., but deferred for one week; child living. The following morning the patient had a slight convulsion, when labor commenced, Dr.

Varick delivering her with forceps; child living. Patient afterward did well in the course of the week. I think, on my part, that it was an error not to have delivered the patient when I first saw her.

Case VII. May 1, 1874. Saw Mrs. C. in consultation with Drs. Crane and White; 8 months gone; urine highly charged with albumen; anasarca of the extremities and face. Premature labor suggested. While we were conversing about the propriety of performing it, Mrs. C. went into strong eclampsia; premature labor commenced; cervix undilated; Barnes's dilators used; version by two fingers; patient delivered in two hours; child born living; mother recovered perfectly.

Case VIII. Met Dr. T. R. Varick, May 20, 1874, respecting the case of Mrs. R., Jersey City, who had anasarca of the extremities and imperfect vision, with œdema of the face; urine very markedly charged with albumen. Premature labor advised, but objected to by the husband, who was a prominent legal gentleman. While conversing with the husband and urging its performance, we were called to Mrs. R., who had become eclampsic. Dissent withdrawn. Premature labor commenced; Barnes's dilators resorted to, and version performed as usual, with the child living; mother also recovered perfectly. Time of labor, 1½ hours.

Case IX. May, 1872. In consultation with Dr. Oliver White. Mrs. A., 8½ months advanced in gestation, and in violent convulsions; child living; urine very albuminous; patient unconscious and sterterous; cervix undilated. Premature labor proposed, though fearing that she would succumb before being delivered. While preparing to operate, the pulse became more feeble and indistinct, and in a few minutes ceased entirely. Post-mortem Cæsarian section; child lived for one hour. There was a considerable amount of property resting on the case.

Case X. Saw Mrs. P. with Dr. Varick, Oct. 5, 1886. Eight months gone in pregnancy; having been in convulsions for two or three hours; cervix dilated to the size of half a dollar; child's life doubtful; urine more than one half albumen. The

small, narrow-bladed forceps were used, but the delivery was tedious; child dead. Craniotomy, and delivery terminated in two hours. Dr. Varick wrote to me a week afterward that the patient died of peritonitis on the seventh day. After the delivery the urine became normal in fifteen hours, and continued so till the peritonitis set in on the sixth day. There were no external manifestations of uræmia.

Case XI. March 11, 1880. Mrs. P.; primipara; aged 25. A few days before the labor at full term came on, there was marked œdema of the face, as well as hands; no swelling of the feet; labor tedious and slow, requiring the use of forceps when the head was in the cavity; no benefit from the instruments, and the child not living. Craniotomy was performed, assisted by Dr. C. Cleveland. On the second day symptoms of melancholia were evident; no eclampsia; urine proved to be albuminous, and continued so for two weeks; the melancholia became more and more distinct and marked. In the third week symptoms of œdema of the brain came on, and the patient died in the fourth week. Dr. Flint in consultation during the last few days.

Case XII. In consultation with Drs. Blaisdel and Bogert, in the case of Mrs. W., at Mineola, L. I., May 27, 1881. Patient arrived at full term and was in strong eclampsia when I saw her, and had been so for a few hours; cervix undilated; Barnes's dilators and forceps resorted to, and child born dead. The eclampsia continued during the night and the following day; ceased on the evening of the second day; urine still strongly albuminous. In the course of a week mania came on of a moderate type, some days being worse, and then improving, but it eventually resulted in Mrs. W. having to be sent to the Flushing Institute.

Case XIII. Saw Mrs. F. July 24, 1883, with Drs. Miranda and Pio Rengifo. Mrs. F. was 8 months gone in gestation, having been brought to the city from the country, showing symptoms of eclampsia; urine highly charged with albumen. Premature labor suggested, and performed that afternoon by Dr. Pio Rengifo; child dead. On the second day after I saw

her, again evidences of peritonitis came on. Patient improved, and on the fifth day was considered out of danger; urine still albuminous. On the seventh morning symptoms of passive mania were apparent and continued for some time, but eventually the patient recovered.

Case XIV. June, 1871. A. B., Charity hospital. I was sent for to see her, having eclampsia at the full term of pregnancy. The house physician had attempted to bring on labor by Kiwisch's method. No change in the cervix had taken place. Pulse was very frequent, 140, feeble and almost imperceptible; sterterous breathing. Chloroform was the anæsthetic. The chloroform was given up, and sulphuric ether substituted. In the course of a few minutes the pulse was reduced in frequency, became fuller and stronger. Patient removed to the amphitheatre; Barnes's dilators used; version, and child delivered in half an hour. Patient lived two days.

Autopsy: The vessels of the brain were highly charged with blood, and two large clots were located on the dura mater.

Case XV. *Ischuria renalis.* Feb. 3, 1882, I saw, with Dr. Raborg, Mrs. E. B. S., who was 8 months gone in pregnancy, having seen her previously on Oct. 20, 1881. Mrs. S. was 42 years of age, and expected to be confined March 3d or 5th. During her pregnancy her feet and limbs became very anasarcous and the face slightly so; otherwise she felt very well. Dr. Flint, Jr., analyzed the urine, and it was pronounced clear from albumen, and was so at the time of labor. Breech presentation. Labor came on Feb. 3d. Mrs. S. was delivered at 9 P. M., child dead. I was called at 9 P. M., Feb. 4th, urine not having passed. Catheterization withdrew three pints, albuminous. At 6 A. M., Feb. 5th, I was summoned to see Mrs. S., who was evidently dying from œdema of the brain, consequent on suppression of urine. Catheter introduced, but not a drop of urine was drawn. Mrs. S. died at 8 A. M. Face very much swollen and pale, and extremities also very anasarcous.

DR. T. GAILLARD THOMAS.

I rise to speak to two questions,—1st, "Should labor be induced in case of the occurrence of eclampsia during pregnancy?" and 2d, "Under what circumstances in case of threatened eclampsia should premature labor be induced as a prophylactic measure?"

There can be no question of the fact that although during the last twenty-five years we have learned a great deal concerning puerperal eclampsia, we are still greatly in need of more light upon the subject, and have yet a vast deal to learn concerning it. The following propositions, however, will be accepted by the majority, I think, as resting even now upon a substantial and enduring basis:

1st. That as we have a form of renal disease entitled desquamative nephritis, due to certain causes about which pathologists are pretty well agreed, and another entitled scarlatinous nephritis, due to the blood poisoning of scarlet fever, so have we still a third which should be entitled puerperal nephritis, which commonly attends upon and is undoubtedly due to the puerperium, or condition of utero-gestation.

2d. That puerperal nephritis, acting upon the peculiar nerve state of puerperality, is the great if not the sole cause of puerperal eclampsia.

3d. That puerperal nephritis accomplishes this result by leaving the blood overcharged with certain noxious elements which the crippled condition of the kidneys causes them to fail to eliminate.

4th. That while we are ignorant of the method by which the puerperium induces this form of nephritis, we have abundant evidence of the fact that as soon as utero-gestation ceases to progress, the renal trouble as a rule diminishes and soon disappears.

As to the first of these propositions, it may be said that all three of the varieties of nephritis to which I have made allusion belong to the common class of desquamative nephritis. As a pathological fact this may be true, but from a clinical

standpoint it is not so, for while ordinary desquamative nephritis, whether it appear in acute or chronic form, is rarely recovered from, even under the most appropriate treatment, that following scarlet fever, very frequently, and that complicating the puerperium, very generally, disappear without any treatment whatsoever. It is difficult, therefore, to regard them as belonging to the same type of disease.

With regard to my second proposition, I would say that I would sustain it by a very large obstetric experience of thirty-four years' duration in this city, and much of it in large public hospitals, to the effect that I have seen but two cases in which puerperal convulsions were unattended by the unquestionable evidences of renal disease. In both these cases, too, after the immediate eclampsic seizures had disappeared, albumen in large amount was found present in the urine.

My third proposition, I think, will be accepted at once without discussion.

As to the fourth, I have had two cases, one of which I will now relate, which demonstrated the fact which I have stated, that as soon as utero-gestation ceases to progress, the renal trouble as a rule diminishes and soon disappears.

I was called to Mrs. A. in the eighth month of pregnancy for severe headache, dimness of vision, œdema of face and feet, nausea and vomiting, and that intolerable "epigastric gnawing" which so often attends puerperal nephritis. Upon testing the urine with heat and nitric acid, one half of the tube was consolidated, and I found upon inquiry that the amount of the renal secretion had greatly diminished. I put the patient upon treatment, and during the following week daily tested the urine. To my great surprise the symptoms which I have recorded rapidly improved, the secretion of urine increased in amount, the albumen diminished, in ten days the state of affairs was wonderfully improved, and I fondly hoped that I had fallen upon a most excellent plan of prophylaxis in such cases; but it became evident very soon that just after my first visit the child had ceased to live, and that the process of utero-gestation had come to a sudden stand-still. During the last part of the ninth month my patient was so comfortable that I had little anxiety about her, and at full term she gave birth to a still-born eight months fœtus.

The second case was the counterpart of this one.

What I have thus far said is prefatory to the remarks which

I shall make in answering the two questions which have been allotted to me, and I propose to base upon these views the affirmative position, which I shall assume without compromise in reference to both of them.

A woman has advanced to the 6th, 7th, or 8th month of pregnancy, and she is suddenly seized with puerperal eclampsia,—a dangerous disorder which will very likely end in her own death and in that of her offspring; which we know to be due to the condition of puerperality which must continue in her case for one, two, or three months before reaching a physiological conclusion; which must, according to all experience, during this time steadily aggravate any renal disorder which may exist; and which, as full term advances, will be more likely, even than at present, to produce dangerous seizures similar to those from which she now suffers.

What are the conditions connected with this case which can warrant the attending obstetrician in allowing the continuance of a puerperium so surrounded with danger for both mother and child? Does he hope, by pressing into his service those great supplementary emunctories, the skin and intestinal canal, to eliminate from the blood noxious elements of the urine already collected there; to cure the existing convulsions by the lancet, chloroform, chloral, and the bromides; and to prevent a future cataclysm, like unto this one, by the milk diet? If he be a neophyte, and base his action upon the theories which he has learned in the lecture-room and the study, he is a far more sanguine man than I. If he be a veteran in the walks of obstetric life, and base his faith upon experience, that experience has been far different from, far happier than, mine! I do not deny that certain rare cases will occur which will seem to sustain such practice as this. But it is not exceptions of which we are in search: we are looking for a rule by which we may be guided at the bedside: and I distinctly affirm that it seems to me that a Fabian policy under these circumstances is surrounded by dangers which threaten two lives, without offering us the compensation of any advantage over an active and energetic course.

I do not by any means maintain that when a patient is seized with puerperal convulsions labor should always be immediately brought on. In many cases in which the seizures yield to the remedies which I have mentioned, it is wise not immediately to excite the nervous system by the establishment of parturition, but to wait for two, three, or four days, until the morbid chain is broken which has registered itself upon the nervous system. It is not to such judicious delay as this that I am opposed, but to that delay which for weeks and months exposes the patient to a reëstablishment of all the morbid elements necessary to eclampsia, to the development of which she has already shown herself prone.

Under these circumstances parents who are anxious for offspring will often oppose the establishment of premature labor under the idea that delay will secure to the child a greater chance of life. If the process of gestation has advanced beyond the 7th month, so far from this being the case the chances of life for the child are much enhanced by interference.

There are three circumstances, and three alone, which would warrant a different line of action from that which I have advocated: 1st. The fact that the convulsions were due to some direct and certainly ascertainable irritant influence susceptible of removal by emesis, catharsis, or by some similar method. 2d. That they were of purely hysterical character, or partook of the form of true epilepsy, to which the patient had long before been subject. Under these circumstances the seizures would depend upon no condition which was likely to prove cumulative from the prolongation of utero-gestation. Beside this, it must be borne in mind that these seizures would not come into the category which we are now considering, for we are discussing the subject of "eclampsia vera puerperalis," not convulsive seizures of bastard character which may complicate the puerperal condition of the woman, as they may occur in the child and in the man. 3d. If it be ascertained that the child has lost its life during the existence of maternal convulsions, and the seizures are controlled by treatment, I

should, from my experience already related, be willing to leave the case to nature, confident that the ending of the progress of gestation would remove all danger for the future, even although a dead child with its secundines still occupies the uterine cavity.

Fearful that I have already overstepped the limit of time which was allotted to me, I shall sum up my answers to the second question as succinctly and briefly as possible under the following headings: 1st. Every obstetrician, mindful of his duty, will, invariably after the third month of pregnancy, examine the urine up to the full term, at least as often as every ten or fourteen days. 2d. If evidences of puerperal nephritis demonstrate their existence before the end of the seventh month, the period of fœtal viability, every effort should be made by daily warm baths, the milk diet, laxatives, and the nightly use of the bromides, to "tide the case over" until that period has been reached. 3d. If the amount of albumen, tube-casts, and epithelium be plentiful in the urine, if the secretion of urine be scanty and the proportion of solid elements small, and the patient complain of severe headache, dimness of vision, and decided gastric disturbance, and all these symptoms do not at once diminish under the prophylactic measures already mentioned, I should not hesitate to bring on premature delivery at once. 4th. Should the patient have passed through previous puerperal conditions with safety, having at the same time presented the symptoms of puerperal nephritis; should the amount of albumen be moderate and the secretion free, with a good proportion of solid elements in it; should the evidences of constitutional disturbance be slight, and the effects of prophylactic measures satisfactory,—I should not induce premature labor, but should await the full term of gestation. But I should await it as the soldier waits who "lies upon his arms," watchful and wary, ready at a moment's notice to meet an issue which threatens him night and day.

QUESTION III.

WHAT ARE THE MOST RELIABLE THERAPEUTIC AGENTS FOR THE CONTROL OF THE CONVULSIONS OF PREGNANCY, LABOR, AND CHILD-BED, AND SHOULD BLEEDING BE EMPLOYED IN ECLAMPSIA?

Discussed by

GEORGE T. HARRISON, M. D., of New York County.
DARWIN COLVIN, M. D., of Wayne County.

DR. GEORGE T. HARRISON.

By general consent of medical opinion, narcotics take first rank as remedies for the control of the eclamptic attacks. Experience shows that their effects are almost invariably of a favorable character. Provided, only, that the narcosis be sufficiently profound, the attacks cease under their influence. Among the narcotics chloroform possesses a potency which it unfolds in so obvious and characteristic a manner as to render its utility incontestible. In the language of Spiegelberg,[1] "it most certainly and quickly fulfils the indication to lower the blood pressure, to quiet the convulsive centres, and to suppress such exciting causes as tend to wake reflex irritability." It is well to bear in mind the danger attending the administration of chloroform when employed immediately after venesection. Spiegelberg knew of a death occurring under such circumstances. Since the first use of chloroform in the treatment of puerperal convulsions, there have not been wanting some who took ground against its utility. The objections urged against chloroform by its adversaries are thus enumerated by Charpentier:[2] "(1) In a considerable number of cases

[1] "Lehrbuch der Geburtshülfe," 2te aufl., p. 518.
[2] "Traité Pratique des Accouchements," p. 743.

the paroxysms not only do not diminish under the influence of the anæsthetics, but they often appear more frequent and more energetic; (2) if chloroform does arrest the paroxysms, the latter appear during the interval of the inhalations of the anæsthetic, and we cannot keep the woman under the chloroform beyond a certain time without danger to her; (3) chloroform is irrational because it produces congestion of the nervous centres, and can thus only augment the cerebro-spinal congestion, which we have already so much to dread in eclampsia; (4) chloroform has the inconvenience of increasing the phenomena of asphyxia in the subjects of eclampsia, already predisposed to this complication; (5) inhalations of chloroform have been followed by the appearance of mania in some eclamptic patients." These objections, it seems to me, are rather the result of *a priori* reasoning than the conclusions drawn from accurate clinical observation. In regard to the third objection,—that it produces congestion of the nervous centres,—there is every reason, on the contrary, to believe that it diminishes arterial tension, and, by controlling muscular action, prevents vascular congestion. The concurrent testimony of the most careful practitioners throughout the civilised world is clear and decided as to the power of chloroform to diminish the frequency and intensity of the convulsive paroxysms.

It is necessary at times to keep the patient in a condition of narcosis for a long time, and as, in private practice, it may not always be in the power of the physician to procure the services of an assistant, and other important engagements may be pressing, it is very desirable to be able to continue the effect produced by the chloroform by the substitution of another agent. Such an agent we have in morphine, subcutaneously injected.

Another agent has of late won for itself a conspicuous place among the best therapeutical resources at our command for controlling the eclamptic paroxysms—hydrate of chloral. It has the advantage over chloroform of being more continuous in its action, and not requiring such constant supervision on

the part of the physician. Its effects are often marvellous, and the success attained by some observers from its use far exceeds that which any other therapeutical means has to show. What other method can exhibit results such as these? Froger[1] collected fifty-one observations, in which chloral had alone been employed. Of these cases forty-eight terminated favorably and only two died, the termination of one case not known; mortality, 4 per cent. Testut reports twenty-nine cases—twenty-seven recovering, one dying, and the termination of one case not being known; a mortality of 3.4 per cent. Delaunay reports thirty-four cases, with thirty-three recoveries and one death; a mortality of 2.94 per cent. The mortality, according to these observers, was greater when the chloral was used after or concurrently with other methods of treatment. Perhaps an explanation of the fact that many physicians have been disappointed in the effects of chloral may be found in the insufficiency of the quantity prescribed. Charpentier, who speaks in the highest terms of the value of chloral under these circumstances, gives 4 grammes in mucilage *per rectum*, and repeats this dose every five or six hours, so that the patient receives 12 grammes in eighteen or twenty-four hours.

A rational mode of treatment is the production of free diaphoresis by means of the hot bath, or by enveloping the patient in a wet sheet and covering her with blankets. Breus,[2] who has made use of hot baths quite extensively, obtained very excellent results. Of late, pilocarpin has been recommended for the same purpose. My experience with this drug is such that I must concur in the opinions expressed by Kleinwöchter, Fordyce Barker, Saenger, and others as to the importance of the greatest amount of care in its application. The dangers are that phenomena of suffocation may appear in consequence of the defective expectoration of the mucus, which is secreted in enormous quantities. Œdema of the lungs may also be produced, owing to the weak action of the

[1] Charpentier, "Traité Pratique des Accouchements," p. 747, T. I.
[2] "Archiv., für Gyn.," B. 19, S. 219.

heart and to the partial closure of the larynx by the enlarged tongue, which has fallen back. If recourse be had to pilocarpin at all, it should only be used in the beginning of the disease, when the pulse is strong, the coma not deep, and the respiration entirely unimpeded.

Whether nitrite of amyl will prove to be a remedy of value remains to be seen. The same may be said of nitro-glycerine, which Dr. Barnes regards as an extremely promising resource. Free purgation would seem to be a rational mode of treatment, and has received the sanction of almost all writers upon this subject in regard to its efficacy. For my own part, I believe that purgatives are indicated in few cases, and that their utility in general has not been proven.

The question of blood-letting in eclampsia presents many difficulties in the way of its solution. In order to help ourselves to a proper comprehension of the theme, let us examine, briefly, the arguments that have been adduced for and against this therapeutical resource by different authorities. Says Scanzoni,[1]—"If we are questioned in regard to its utility, we must express ourselves in the most positive manner to this effect, that the convulsions, not rarely, moderate immediately after the withdrawal of blood; that at times, in the milder cases, no other attack occurs, and that the congestion of the brain is often very considerably diminished. * * * As long as the injuriousness of general blood-letting is not demonstrated by more convincing reasons than those hitherto brought forward, we will always proceed to open a vein, if the patient is strong, is not anæmic, and if the extraordinary reddening of the face, the brilliancy of the eyes, the injection of the conjunctiva, the intense pulsation of the carotids, etc., indicate a quite considerable congestion of the brain; and it is a matter of indifference whether this latter was already originally present, or only appeared later as a consequence of respiratory and circulatory disturbances brought about by the convulsions." Spiegelberg,[2] too, gave the weight of his great au-

[1] "Lehrb. der Geburtshülfe," II Bd., p. 397
[2] L. C., p. 517.

thority in favor of venesection. "No means," he observes, "so quickly and certainly lowers arterial pressure; none restores so quickly the function of the kidneys, so sensitive to changes of the blood pressure, and few relax so well the excited vaso-motor nerves." Dr. Barnes[1] says that "it is undoubtedly the most powerful and prompt resource at command for lowering the high vascular tension, a primary cause of the eclampsia." Dr. Barker thinks that "the bleeding is sedative to nervous irritation; it removes the tension from the brain, and protects it from the injury which might otherwise result from the convulsions; it relieves congestion of the kidneys and lungs, and takes off the pressure from the laboring heart; and it may be that it supplements the action of the kidneys, and removes from the blood a portion of its excess of urea."[2]

On the other hand, Carl Braun[3] is of the decided conviction that "blood-letting in uræmic eclampsia operates injuriously, because the cyanosis of the face occurring in eclamptic women is only a consequence of the spasm; the hydræmia is still more increased by venesection, and the nervous attacks are not improved; while aggravation of the paroxysms, exhaustion, a fainting fit, and tardy convalescence are not rarely produced by it." Schroeder[4] enumerates his views as follows: "The much recommended venesections I apply only quite exceptionally. They are not indicated on account of the paroxysms in themselves, since they deteriorate the quality of the blood, and the repetition of the attack can be avoided much more certainly by narcotics. In powerful, full-blooded, parturient women, however, with signs of overfilling of the small circulation, a free venesection may be quite necessary."

It will thus be seen that the main argument employed by the advocates of venesection involves the postulate that blood-letting rapidly and powerfully lowers blood-pressure. Physiological experiment,[5] on the contrary, demonstrates that blood-

1 "System of Obstetric Medicine and Surgery," p. 300.
2 "Puerperal Dis.," p. 111.
3 "Lehrb. der Gesammt. Gyn.," p. 835.
4 "Lehrb. der Geb.," 8te aufl., p. 728.
5 "Foster's Text-Book of Physiology," p. 208.

pressure cannot be lowered directly by bleeding, unless the quantity removed be dangerously large. Now, as it can be shown by statistical proof that the mortality is very unfavorably affected by copious blood-letting, and as the abstraction of a moderate amount of blood cannot affect blood-pressure, as we have just seen, it necessarily follows that a resort to this therapeutical measure is entirely irrational. I would make use of it only under the conditions mentioned by Schroeder.

DR. DARWIN COLVIN.

The sentiments expressed in a paper which I had the honor of reading before this Association at its first meeting, relative to the proper therapeutic treatment of convulsions occurring during pregnancy, parturition, and child-bed, have remained unchanged, and, if possible, more confirmed by the additional experience obtained in a case occurring on the 28th of December last.

After two score years of clinical experience in the treatment of this grave malady, I as firmly believe that, in a large majority of cases, blood-letting is imperative, as did Denman nearly a century ago, when he said,—"But I have not for many years seen or heard of a patient dying with puerperal convulsions, *if bleeding had been timely and sufficiently performed.*"

My strong predilections in favor of venesection in eclampsia incident to pregnancy must not be charged to prejudice, as I had only been in practice three or four years when the profession (the writer included), for reasons which are lamentable to me, hauling in its gang-plank and swerving from its moorings, left port on an obstetrical voyage with a compass whose needle constantly pointed to chloroform as the infallible remedy, and one which was not only to render the throes of parturition delightful, but which would be a successful antagonist of death should convulsions, as an intercurrent symptom, seek to complicate the labor. The author of this paper made two voyages, when his timidity overpowered him, and

he ever after remained on land. From that hour to the present, owing to the unreliability of the instrument, the professional craft has frequently been driven into port, being unable to cope with adverse winds, or to avoid those rocks and quicksands which a skilful professional mariner with a judicious guide readily shuns, except under the most extraordinary circumstances.

In what I may say relative to the treatment of convulsions occurring during pregnancy, I shall exclude those which arise from eccentric causes, such as indigestible substances in the stomach, intestinal irritation, irritation of the bladder and rectum, as the indications to be answered are too plain to require consideration at this time. In the practice of a judicious physician this class of convulsions is not observed so frequently as it was twenty years ago, more especially where he has timely notice that his services will be required when the period of parturition shall have arrived, as he will endeavor to so guard the future of his patient, especially if his directions are faithfully carried out, that she will, with very few exceptions, be able to escape what would otherwise be a disastrous complication. We must not expect that every case will terminate so fortunately, but by far the greater number will.

Without circumlocution, suppose such facilities have not been given the physician, and his first introduction is in the sick-room. Perhaps, as has occurred to me more than once, the patient has had one convulsion ere he arrived. Time is invaluable; there is not a moment to be lost; he knows nothing of her past symptoms, either objective or subjective; the patient may or may not be comatose. His first duty is to open a vein, after which, by keeping his fingers constantly upon the opposite pulse, he can intelligently judge of the amount proper for the patient to lose; for I assure you that the future of the patient largely depends upon the amount taken at the first bleeding. Do not make a stereotyped quantity the rule, but let the character of the pulse be the guide. If, from a small and irregular pulse, irregular as to frequency

(the latter will usually be observed if the patient be comatose), you have a fuller and more regular one, as I have often observed, let the blood continue to flow until that condition is fully established, be the quantity what it may. With that evidence the general aspect of the case will be improved. You will then have time given you to farther investigate the case; you will ascertain that her confinement is not expected for a few weeks to come. Immediately after arresting the flow of blood, a drastic cathartic should be given: the particular agent is immaterial. Should she be comatose, croton oil or croton oil and calomel can be placed upon the tongue; if not, sulphate of soda, aloin, or elaterium will answer well. In three cases, where the pulse was preternaturally rapid, I have witnessed very decided benefit from the use of veratrum viride. After the cathartic is given, a vaginal examination is necessary, as premature labor may have begun. Should the os be unchanged, and there be no other evidence of uterine contraction, no further indications of another convulsion, some urine for analysis should be obtained. If the urine yield much albumen, a judicious treatment for lessening the amount should be instituted immediately after the operation of the cathartic, such as saline laxatives, possibly diuretics, rigid diet (and by that I mean a non-stimulating one), together with quiet surroundings. Dry or wet cups over the region of the kidneys are frequently of benefit. But you must not expect, as is often the case, to find albuminuria as a cause in every case. Neither will you have eclampsia in every case, even when you have a large amount of albumen in the urine. However, as the pathology of the disease does not enter into the consideration of this paper, I will say no more about it.

If, after all this has been accomplished, there should be a recurrence of the convulsions, with no uterine contractions threatening labor previous to the completion of term, another venesection will in all probability be demanded; and, in connection therewith, measures for inducing premature labor, if possible, should be resorted to. It is here that morphia (hy-

podermically), chloroform, and chloral will be required; and the inevitable bromide of potassium, which is so vauntingly and many times empirically prescribed in these cases, may often be added with benefit, more especially if Merck's manufacture be used. I am certain that the nervous system more readily responds to these agents after than before venesection. The recurrence of the convulsive seizures makes the emptying of the uterus, to me, as a rule, a necessity, that life may be saved.

Please go with me now to the lying-in room of a woman at term. Without specifying the minutiæ of symptoms, if any, which usually precede a convulsion (as you are all familiar with them), I will suppose that during the progress of the labor a convulsion, with all its fury, attacks the patient. I would immediately open a vein, though the labor seemed going on favorably, for the reason that a second one is more likely to kill than the first, and more likely to recur if such prompt measures are not made use of to prevent. Also, if the convulsions are not prevented at the onset, an increased irritability of the cerebro-spinal system is developed, which will increase the predisposition to recurrence. As to the amount of blood to be taken, the use of cathartic agents, etc., I would be governed as in the case occurring before the completion of term. Immediately after the arm-dressing and the administration of the cathartic agent, chloroform (not ether) should at once be ready for use, and when used, be pushed to an extent which will, if possible, ward off a recurring paroxysm, although the fear of a second convulsion is now reduced to a minimum. If some slight twitchings of the muscles of the face be noticed, at once obtain a more profound effect from the anæsthetic. I prefer chloroform to ether, as I believe that in this malady it is as safe as ether, and far less likely to induce vomiting, which should be avoided, if possible. I have invariably used it in these cases, as well as in many labors not complicated with convulsions, and have never yet had occasion to regret it. I would not use it alone to a great extent in preference to ether in other cases requiring an

anæsthetic, but have often combined it with ether, and sometimes with ether and alcohol. The next important step should be directed to the completion of labor, in as rapid manner as it can be judiciously done. It is now that I would not acquiesce in the adage "Let nature take her course," but would make haste to increase her efforts, as before said—judiciously. If the fœtus should be dead, I would perform craniotomy, if by it time could be saved, as I have never witnessed any ill results from the operation. After the completion of labor, it is very necessary that the medical attendant should be unremitting in his attentions upon the renal secretion of the patient, should there be anything abnormal connected with it, until its normal condition is fully restored.

Mr. President, I fear that I have exceeded the time allotted me, and that I may have wearied my hearers in endeavoring, hopeless as may be the effort, to induce them to dispassionately study the true treatment of the class of cases under consideration. I am aware that since the introduction of chloroform and ether in midwifery, practitioners are circumscribed by prejudices against blood-letting, as a treatment in those convulsions occurring as the result of pregnancy; yet should that fact justify them in circumition? Upon the physician rests the responsibility of losing or saving the patient's life. I am also aware that a paper upon this subject, which requires to be read in ten minutes, can scarcely be called an epitome of the practice, consequently cannot escape criticism.

Lest I may be misunderstood, allow me again to say that I never advise venesection as a *dernier ressort*, but insist that it shall be done *at the onset*. It must be the alpha and not the omega of treatment. I well know, also, that we are living, as regards the practice of medicine and surgery, in the stimulating and excessive-nutrition age. All that seems to be necessary now to be considered well up in the profession, as far as dietetics are concerned, is to almost indiscriminately prescribe three or four quarts of milk and a pint of whiskey during the twenty-four hours, whether or not the patient can digest, or even retain, it all. The opponents of venesection

in puerperal eclampsia, who are usually strong advocates of morphia hypodermically, if they do not insist upon the whiskey, will urgently advise the liberal use of milk at the same time, when they must know, if they give the subject a passing thought, that digestion is almost entirely suspended before the morphia is introduced,—and completely so afterward, or while the patient is so profoundly under its influence. I once asked a very clever practitioner, who was pertinaciously opposed to blood-letting in this form of eclampsia—opposed without experience—and who claimed to hypodermically introduce not less than one half, and sometimes one, grain of morphia at each operation, how he would know which killed (for I had known of his losing cases of the kind under consideration),—the convulsions, or the morphia? His reply was,—"It makes no difference: if the patient is to die in a comatose condition, it matters not which is the cause." I felt that nothing would be gained by extending the conversation.

Others, who oppose blood-letting in puerperal eclampsia, have not given the remedy a proper trial (and by proper trial, I mean its use at a sufficiently early period), but have done so only after exhausting their efforts otherwise, and then as a *dernier ressort.* And I know of those, who are equally opposed, who have never added phlebotomy to their catalogue of surgical operations. There may be some excuse for this class of objectors, as phlebotomy, with its advantages, is seldom taught in our medical schools at the present day.

I have no theories to advance, for theories will not answer as long as clinical facts are so easy to obtain. By the latter must we be governed, and by the latter only. While preparing this paper the writer received the statistics of more than three thousand cases of labor, attended by the venerable Dr. Corson, of Pennsylvania; and of that number there were ten cases of puerperal convulsions, all of which were freely bled, and all recovered.

With these remarks I submit this paper. It is the result of forty years' clinical experience in a not very limited practice

in midwifery; and let no critic be startled when I say that I have never seen a fatal termination of a case of convulsions occurring before, during, or after parturition, when it had been treated in the manner which I have, however feebly, attempted to describe.

QUESTION IV.

IN WHAT PROPORTION DO THE INSANE IN PUBLIC ASYLUMS OWE THEIR INSANITY TO PUERPERAL CONVULSIONS?

Discussed by

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G. Alder Blumer, M. D., of Oneida County.

DR. JAMES R. MACGREGOR.

The occurrence of convulsions in the puerperal woman—from the sudden onset, marked symptoms, and grave import, requiring as it does prompt and energetic management, taxing the highest resources of medical art, and the most judicious and timely applications of the discriminations of sound judgment in the interpreting of symptoms—exemplifies a state of disease which, for its successful management, must enlist the best qualities of a positive mind with well matured experiences. With its doubtful prospect for the time, there must also be that sense of responsibility which brings to the medical man a full share of those wearing emotions which mark more or less the whole of his professional life. In this disease, however, his anxieties are mainly exercised in dealing with the existing exigencies of the case, those which with their threatening aspect appeal objectively to his senses through the medium of his eyes and ears. If the crisis is passed safely, he feels greatly eased of his burden of care, and considers that a moderate amount of attention and efforts of an ordinary character are sufficient for a favorable outcome. It probably does not often occur to him to realise that in placing the patient in a condition of safety as far as life is concerned, there may be influences at work, hidden in their nature but positive in their operation, which in their near or

remote development may have a very important bearing upon the patient's well-being, not only as regards life, but likewise in respect of those higher relations which affect the happiness of mankind. If these influences exist, the needs of humanity as well as the interests of science claim their full investigation. Such is the nature of the question with which I find myself confronted.

In entering upon this inquiry, we are naturally led to cast about for those sources of information which, either from their direct bearing upon it, or the correlation of allied or coexisting states of disease, would be likely to afford any light. In doing so we find but two avenues of approach whereby we may arrive at what is known concerning it, namely,—1st, examining that department of the literature of medicine to which this subject is supposed to belong; 2d, ascertaining the experiences and opinions entertained by those whose pursuits and opportunities qualify them to be regarded as authority in these matters.

In reference to the literature of insanity, the writer would say that although he was formerly tolerably familiar with many of the standard works upon the subject, of late years his attention has not been given to that specialty, his reading comprising the works of such authors as Haslam and Wigan in the earlier part of this century; Sir W. C. Ellis, Prichard, and Conolly, somewhat later; Ray, Forbes Winslow, and Maudsley, still more modern;—he is free to confess, however, that a hasty examination of some of the above named treatises, together with a few of the authors of the present time and some of the medical journals, embraces all the search that opportunity would admit of for this purpose. In the systematic treatises, as far as can be learned from the above-named authorities, there is nothing to be found indicating the recognition of any such condition as puerperal eclampsia occupying a definite causal relation to insanity.

If it be claimed that these authors represent but a very small part of the literature of insanity, we may say that the names are well known, and their works form a fair sample of

what has been written; moreover, it is well known that every writer endeavors to bring his work up to the knowledge of the day, and every new feature brought to notice is soon reflected in the writings of others. On turning to the standard works of the present time we do not fare much better. I am unable to find any mention of it in Sankey, Sheppard, or Hammond. Two cases are reported by Samt, where the convulsions were attributed to uræmia, whether puerperal or not is not stated.

Spitzka speaks of it in the following language: "The view has been expressed, that when albuminuria coexists with the maniacal and frenzy-like explosions of the puerperal state, the uræmia is a collateral factor. No substantial grounds exist for endorsing this view;" and he adds "that he has been able to satisfy himself of the absence of even an approximately constant relation of renal and mental disorder in the puerperal state."

Dr. D. Hack Tuke makes a brief mention of seven cases of puerperal mania where the urine was tested for albumen: 1st case. Had convulsions about six hours after delivery. The urine, which was smoky, was examined, and found to be loaded with albumen and a thick sediment of lithates; sp. gr. 1040. The next day the fits were less violent, but she was quite maniacal, tearing up her clothes and otherwise misconducting herself; evacuations were passed in bed. Was purged with calomel and croton oil. On the following day she was less excited, and the fits ceased. At the end of a week she was convalescent, and in ten days all trace of albuminuria had disappeared. 2d case. Was attacked with convulsions during labor. The maniacal symptoms were more severe than in the previous case, lasting ten days. The urine was albuminous, and remained so three weeks. She recovered well. In five mild cases of puerperal convulsions, attended with a rapid pulse, a good deal of excitement, but no decidedly maniacal symptoms, there was no albumen in the urine, which was pale and of low specific gravity. These patients (primiparæ) recovered in about twenty-four hours. The same author, in

speaking of the causes of puerperal insanity, mentions as one the use of the lancet for puerperal convulsions, quoting two cases in illustration, occurring in the practice of a medical friend, in both of which cases the urine was non-albuminous.

The first formal announcement of renal derangement, in a causal relation to insanity as a distinct pathological feature, was made by the late Prof. Simpson in 1856, in a paper read before the Obstetrical Society of Edinburgh, and published in the "Edinburgh Medical Journal" in February of the following year. He cited four cases of puerperal mania in which albuminuria existed at the commencement of the attack in each, and said,—"When we see albuminuria in the parturient female so often lead on to convulsions and coma, we cannot be surprised at meeting with this other cerebral complication in connection with it." In what exact pathological relation the albuminuria stands to these various complications is not stated; in fact, he advanced no special doctrine in reference to it, but brought it to notice tentatively as a condition worthy of investigation. In the four cases mentioned, convulsions were present in one only.

This announcement attracted attention, for in 1860 the same journal published a paper by Dr. Donkin, of Newcastle-on-Tyne, in which the importance of Prof. Simpson's communication was eulogised. The full account of one case was given, which, together with the four of Prof. Simpson, formed the basis of an elaborate examination into the relations existing between albuminuria in the puerperal woman and the development of mania. The conclusions arrived at were stated with the decision of a positive conviction, and were claimed as the establishment of a new dogma for acceptance. These two papers seem to have been the occasion of keeping the notice of the subject before the profession, for we find reference to them in several of the text-books on obstetrics, and some of the works on general medicine.

In 1863 Dr. Richard Gundry, of Ohio, contributed to the "American Journal of Insanity" a long and exhaustive article on puerperal insanity, in which every feature of this

disease was minutely discussed and scrutinised with extended statistical and tabulated comparisons. This paper received marked attention, and was favorably commented upon, both in this country and in Europe. He alludes to Merriman, Gooch, Esquirol, Frias, Selade, Billod, and Reid, as reporting one instance each of puerperal insanity complicated with puerperal convulsions, and apparently dependent on that cause; but in reference to their connection he uses the following words: "Yet the proportion of patients with eclampsia becoming deranged is exceedingly small, too trifling to furnish evidence of any relation existing between them as cause and effect."

In pursuing the second line of inquiry, a circular letter was prepared embracing this question, a copy of which was mailed to the medical superintendent of every known institution for the insane in the United States. The number of letters thus sent amounted to 105, and the number of replies received up to the time of writing this paper was sixty-four. Of those institutions from which replies were received, there were six only from which any cases were reported. From one hospital there is a return of four cases; from two, three cases each are reported; and from three, a return of one each. Of the remaining fifty-eight, there are no records showing a single instance of puerperal eclampsia in connection with mental derangement. It is proper, however, to state that the force of this testimony is somewhat modified by various circumstances. In many of the hospitals the records are so kept that it would be impossible to elicit from them any particular feature of insanity without an impracticable amount of search. It may be possible that if such an examination could be made, the existence of more cases might be revealed. In most of the instances where no cases are reported, the superintendent gives his opinion from his personal recollections, and the statement is almost invariably the same, viz., "that he is unable to recall a single case in his experience," or words of similar import. One superintendent states that there were a *very few* cases, but the records not being tabulated he could

not give any account of them. Another had met with none in his hospital experience, but he had seen two in private practice, the particulars of which were not given. One institution was devoted exclusively to the care of male patients. In one, the inmates were all negroes, and it was the experience of the superintendent that eclampsia was a rare disease among negro women. It might be supposed that the different stations in life existing in the inmates as a class, in comparing public and private institutions, would affect this question, but it is found that the conditions are about equal. The influences of poverty, deprivation, and hard work in the poorer classes are counterbalanced by the luxurious and artificial habits in the higher walks of society.

It is to be regretted that in only eight instances is the number of admissions stated. They are as follows:

Admissions.	Females.	Puerperal Insanity.	Eclampsia.
300	200		
657			
3 to 4000			
750			1
318	162		1
	164	9	
	2500 (17 years.)		
778		79	3

One institution reports 97 cases of puerperal insanity, in three of which there were convulsions; another, 79 cases, in three of which there were convulsions; a third, 80 cases, four of which had convulsions; a fourth, 32 cases, in none of which were there convulsions.

From two hospitals reporting cases of eclampsia, a brief mention is made of some of the circumstances. In one case the convulsions came on ten days after delivery, the mental symptoms closely following the convulsions. The patient was admitted May 26, 1881, and is still an inmate. Form of the disease, chronic mania. In another case—which was one

of three reported from a single institution—the patient had convulsions at her first confinement followed by insanity. At her second confinement had convulsions which were not followed by mental disease. After her third confinement she became maniacal, but had no convulsive seizures.

From the fact that the superintendents of private asylums are more likely to obtain a reliable account of the antecedents of their inmates, either through the family physicians, or relatives with whom they are generally brought in contact, we would expect that the chances of learning the history of a case in such institutions would be much greater than in those large institutions where great numbers are contained, concerning many of whom nothing can be known. It is a significant fact, however, that notwithstanding the better facilities of the former for securing this knowledge, neither from their records nor in their personal recollections is there one case to be revealed.

It is difficult to speculate upon the *modus operandi* of pathological conditions in the light of a relationship, the existence of which is not at all certain; yet *a priori* it is no stretch of the imagination to suppose that an agent sufficiently potent in its effect upon the brain to produce convulsions could be regarded as capable of inducing the after phenomena as well, those sequelæ which are found to be either frequent or occasional from epileptiform seizures of whatever kind. Morbid states of the blood, as far back as the pathology of insanity has been intelligently considered, have been regarded as playing no unimportant part in the ætiology of the disease. Maudsley says that "It can admit of no question that every degree of mental disease, from the mildest degree of melancholic depression to the extremest fury of delirium, may be due to the non-evacuation from the blood of the waste matters of the tissues." He notices several of these noxious substances, particularly the poison of gout, but makes no mention of the uræmic condition.

If we are to admit the existence of a connection between these two conditions and to regard the resulting insanity as

arising from the action of a specific poison, we have presented for our consideration two views of its manner of operation in producing the mental symptoms, either by the direct effect of the morbid product disturbing the functions of the brain, or indirectly as in the case of convulsions, the mental symptoms being the result of the epileptiform discharges.

An adequate consideration of these relations involves an examination into the whole range of the ætiology of insanity, and likewise into the various systems of classification which have been advanced by nosologists.

According to the first view—that the morbid product acts in a direct manner—it would be placed, as for example by Morel, whose classification based upon the somatic causes is one of the most complete of its kind, in his second group, which embraces all cases of insanity that are produced by intoxicating or poisonous agents. If the second view is the correct one, it would with equal propriety be placed in the epileptic class of his third group, insanity produced by the transformation of other diseases. It may be said, however, with regard to classification, that no system founded upon a single principle is sufficiently comprehensive and at the same time discriminating to cover all the conditions, whether it be the arranging of the mental functions, the pathological changes, or the somatic causes. I believe with Dr. Tuke that "they are all perfectly consistent one with another when their right relative position and bearing are clearly stated, and they are called by their right names."

Regarding it then in the light of a toxic insanity, we are brought at once to the consideration of that association of elements which we call uræmia. From the time of Bright and Christison, the neurotics of renal disease have been the subject of investigation with an interest and an amount of experimental search that have probably not been surpassed in the pursuit of any single pathological study. The host of experimenters who have brought forward theories of explanation for this condition, each of which theories having its period and its supporters, attest the difficulties which have

attended the undertaking. The simple enumeration of them in a concise manner would form a document of considerable size. That of Frerichs (the decomposition of urea into carbonate of ammonia), from its plausibility and facility of demonstration, held its ascendency longer than any other. Its seeming ability to account for the phenomena gained for it an assent which preponderated over other opinions. It was not long, however, before it was assailed, and there came forward investigators who found that the artificial introduction of this substance was in many cases not followed by that train of symptoms which were regarded as characteristic of the condition; and other cases of undoubted uræmia were observed in which no carbonate of ammonia could be detected, either in the breath, blood, or secretions. We have good authority for the statement that it is not the accepted doctrine of to-day. The history of all the other views is very much the same. The expenditure of labor, which has so long and so industriously been applied in this direction, has brought us no nearer to a solution of the problem than is expressed in the following sentence by Grainger Stewart: "The evidence at present before us seems to point to the probability of the process being due to retention of some excrementitious material or materials."

It is not necessarily the case, moreover, that because a certain group of symptoms often follows the ablation of or interference with some of the internal organs, or the introduction of various solutions into the circulation in the lower animals, these symptoms must have the same ætiological reference as obtains when they are the exponents of renal disease in the human subject. If it were so, from a parity of reasoning we should be warranted in assuming that the rapidly recurring convulsions of a chronic epileptic indicated uræmia as well.

I would be loth to underrate the value of these investigations, as they are laudable enough, considered as a pursuit seeking for pathogenetic features of disease; but in their application to the discernment of the nature of puerperal

insanity they can hardly be deemed satisfactory on account of their exclusive character, and the tendency they engender to bias judgment in favor of preconceived views, and to set up ideal standards of disease. The associations are too intimate, in a complex condition such as insanity presents, to admit of the examination of any separate feature without due consideration of the rest. The modifying effects of the combination imperatively call for notice.

It is hardly within the purport of this paper to attempt to unravel the perplexities encountered in the study of such a complicated subject as uræmia. Even if this could be done and its exact influence known, its power to produce diseased action in various ways, it is not very certain that the knowledge acquired would be of much service in the investigation of puerperal insanity, if we may judge by the number of instances in which its application would be required.

I think that there are good grounds for believing that the various conditions which puerperal insanity manifests can be better understood by another mode of inquiry, one which is certainly practical, and probably more free from speculation, and which, moreover, offers opportunities for studying the various features of this disease as they ordinarily occur, not as they are artificially induced.

The method which seems most practicable is more in the line of the second mode of inquiry previously referred to, namely, to consider the mental symptoms as a result of the brain disturbances from the epileptic seizures, but with the additional feature of looking into the relations of these manifestations as exhibited in allied diseases.

The psychical phases of puerperal insanity as the expression of a recognised form of disease find their counterpart not only in other varieties of insanity, but also in other diseases in which insanity is only an occasional accompaniment. This statement, however, is hardly intended to cover those fanciful cases which are sometimes related as singular illustrations of a connection supposed to exist, such, for instance, as a monomania which is suddenly cured by the replacement of a

retroverted uterus, but rather those cases of physical disorder which have a well known tendency to disturb the mental functions.

Notably among the diseases of this kind is epilepsy, in which, when followed by mental disturbances, the variety and character of the latter symptoms in many respects resemble strongly those of puerperal insanity. In epileptic insanity the seizures differ in no respect from those of ordinary epilepsy. The terms *grand mal* and *petit mal* are equally applicable to the former. In fact, this parallelism has even been applied to the mental phenomena as well. Falret sought to establish a definite relation between the character of the seizure and the mental manifestations, applying to the latter the terms *intellectual grand mal* and *intellectual petit mal.* Such a relation is, however, by no means constant, and the mental symptoms belonging to any seizure in the light of this supposed correspondence may be reversed.

Samt, although recognising these two forms of Falret, groups them together as acute post-epileptic insanity, making a three-fold division. 1st. *Simple post-epileptic* stupor, with sometimes confusion of ideas and disordered perceptions. 2d. *Post epileptic morbid conditions* of fear or fright, with great excitement (intellectual *grand mal*): stupor is present in this variety, but may be so mild as to be unnoticed. 3d. *Post-epileptic maniacal moria*, manifesting excitement and treacherous acts of violence. Spitzka offers a classification, based upon the chronological relation of the psychical symptoms to the epileptic seizure, arranging them as follows: 1st. *The epileptic psychical equivalent*, which replaces the convulsive attack. 2d. *The acute post-epileptic insanity* immediately following the convulsion or the stupor, if present; or the psychical equivalent of the convulsion. 3d. The pre-epileptic insanity which precedes the seizure, increasing in degree the paroxysm constituting the climax. 4th. *The intervallary epileptic insanity*, the mental disturbance occurring between the paroxysms, but neither immediately preceding nor following them.

From these divisions it can be readily seen that in epileptic insanity there are mental manifestions of all grades and variety. There are states of exaltation and depression,—the former marked by furious excitement, in which irascibility is a prominent feature, the subject not capable of being soothed by any endeavor of persuasion or kindness. This feature often enables us to distinguish between epileptic mania and the ordinary acute form, in which the patient, if his attention can be attracted at all, is to a certain extent tractable, and, by judicious influences, may for the time be rendered tolerably good-natured and manageable. The state of depression exhibits the conditions of melancholia, with hatred, suspicion, distrust, and aversion to friends. All these conditions are more or less interchangeable, and the tendency is, as the attacks are repeated, for them to become blended; indeed, the continuance of the disease tends to undermine all the faculties, causing the patient to drift into a state of dementia, in which he is listless, indisposed, forgetful, and entirely dependent on those about him, or to develop incurable mania. From the high reflex susceptibility manifested by the insane epileptic, it is to be remembered, however, that there is hardly a condition of mental torpor from which he may not be roused by slight causes of irritation into outbursts of excessive violence; indeed, this often occurs without any exciting circumstance that is apparent. This state of general sensibility is observed, also, in the hallucinations, which are vivid and usually of a distressing nature.

Among the faculties which are affected in epileptic insanity, where the disease has continued for any length of time, is that of the memory. This infirmity is proverbial, and is one of the first indications of intellectual decay. Its association with the deterioration of the intellectual powers generally is, however, to be distinguished from that temporary loss of memory connected with the convulsions. It has long been recognised that mental disturbances, and those of the most pronounced character, are more liable to follow epileptic seizures of a mild form, or merely a vertigo (*petit mal*), than those which are

severe. From some cause,—it may be from that peculiar condition of the nerve cells, which determines both the convulsion and the mental condition,—when the discharge occurs with violence, the morbid innervation expends its force mostly at once, and is then directed toward the physical manifestations; whereas, when the seizure is slight, this influence is exercised in a more gradual manner, and the direction it is disposed to take is toward psychical disturbances.

One phase which this disease not unfrequently takes is in the exhibition of sudden paroxysms of violence or other peculiar acts, motiveless or otherwise, without convulsive seizure, or none that is apparent. This condition has been variously termed "masked epilepsy;" by the French, "larvated epilepsy," "intermittent cerebral epilepsy," "the psychical equivalent of the convulsion," etc. It may precede a convulsive attack, and is then designated "pre-epileptic insanity." Hughlings Jackson believes that where mental symptoms replace the fit, there is a transitory epileptic paroxysm, which may be too slight to cause the external features, but sufficient to affect the highest nervous centres. Into this category Echeverria places that form of insanity known as transitory mania. It is in this variety of epileptic insanity that many of those overt acts are committed which interest the expert, and tax his best efforts in determining the question of legal responsibility. Here we shall find ample illustration of those "imperative conceptions" to do strange things, in which the individual propensity receives a specific name, according to the character of the impulse, such as homicidal mania, pyromania, kleptomania, dipsomania, etc.

All varieties of seizure in epileptic insanity may be followed by a loss of memory concerning the events connected with the attack. This varies from slight mental confusion to absolute unconsciousness of anything that has happened. After the explosions of *grand mal*, the mental symptoms promptly follow the stupor which succeeds the convulsions, and the lapse of memory becomes evident after the mind returns to its ordinary state. Where there is no premonitory convul-

sive attack, there may be that peculiar mental condition in which the patient's actions and conversation seemingly exhibit a perfect knowledge of his external relations—he performing many acts indicating the possession of judgment and calculation—when, after a profound sleep, which, from its character and the subsequent sudden recovery of the patient, has been mistaken for the sleep of drunkenness, he may awaken to consciousness utterly oblivious of everything that had happened during the spell. The term *mental automatism* has been applied to this condition. It bears some resemblance to somnambulism, where cerebration is limited by sleep to a partial action; also, to those states known as ecstasy and hypnotism, where, under the influence of a dominant emotion, one or more of the cerebral functions are intensified, and the others placed in abeyance. This digression (for which it is hoped that the writer will be pardoned) not only enables us to make some comparison of the morbid mental phases exhibited in epileptic and puerperal insanity, but the former serves as well as any other form to illustrate that intimate and subtle connection which exists between physical disorder and mental disturbance.

In puerperal insanity the mental symptoms are in many respects similar. Mania is the more common manifestation. The development may be gradual, the patient at first showing signs of waywardness, with a fitful and peevish temper. The bodily functions are vitiated; the tongue coated; there is feverishness, with headache; and the milk and lochia are often suppressed. This latter condition was strongly emphasized as a causal element in some of the replies received by the writer. Soon symptoms of excitement appear, and grow more intense; talking is incessant, with incoherence, until active mania is established. The delusions are strong, and partake of a sense of injury: consequently there is a feeling of aversion and hatred, with a desire to do some act of violence, especially manifested toward the infant. The heightened sensibility to illusions and hallucinations, causing emotions of a distressing character, corresponds to those observed in epi-

leptic insanity. The development is not always gradual. Premonitory symptoms may be absent or slight, the maniacal symptoms breaking out suddenly and with great activity. A case is related by Lord Hale of a woman who, after confinement, passing several nights without sleep, fell into a temporary phrensy and killed her infant while the attendants were absent. She was brought to jail, and, after some sleep, recovered her understanding, but marvelled how or why she came thither. In the absence of maniacal excitement there is great moral perversion, often without marked physical symptoms, and sometimes without intellectual disturbance,—a moral insanity, in which the tendency to homicide is not an uncommon manifestation. Cases of this kind, taken from various sources, will be found related in "Ray's Medical Jurisprudence of Insanity." Lapses of memory approaching almost to that condition spoken of in connection with epileptic insanity as mental automatism are in this form occasionally seen.

When we see such profound disturbances as are exhibited in the two forms of insanity above mentioned, and so often connected with physical disturbances which may be slight or seemingly trivial, we are better prepared to comprehend the tendency which the nervous system manifests to assume a morbid exercise of its functions. The special question which is before us is beset with many difficulties. The reliability of any conclusions must necessarily be affected by all those uncertainties attendant upon an examination which involves points of doctrine not definitely settled. Moreover, the combination of elements producing a certain diseased condition is ever varying in its proportions. In addition, the susceptibility to the influence of the various agencies operating differs greatly among individuals. These features preclude any absolute method of striking a precise balance. We can do no better than to carefully consider all the elements that may reasonably be considered as entering into the problem, and then to estimate as accurately as we may be able the relative force and effect of each.

If a case of insanity was given, where the patient was endowed with a sensitive and feeble nervous organisation; parentage showing the history of syphilis, intemperance, epilepsy, neuralgia, or any other taint regarded as disposing to insanity in the offspring; and where, after parturition which was complicated with convulsions, mania supervened,—could we, with any degree of positiveness, assert that, had the convulsions not been present, there would have been no insanity? Assuredly we could not. The most that we could say, under the circumstances, would be that uræmic convulsions being known to be capable of effecting a positive damage to the brain functions, we are warranted in supposing that they may have had some share in the result.

The indefinite relation which puerperal eclampsia holds toward insanity is well exemplified in one of the cases reported to the writer; and it is significant, as far as one instance can have weight, in showing the non-essential character of such a relation. A patient, with a history of three confinements;—after the first one, in which there were convulsions, insanity developed; the second was complicated with convulsions, but no mental disturbance followed; in the third, there were no convulsive seizures, but mania supervened. The almost universal silence maintained by alienists toward this pathological condition as a cause implies either its rarity or its insignificance. This is hardly to be explained on the theory that it has been overlooked. Causative influences, far less pronounced in their manifestation, have for a long time been noticed; and we cannot think such an inference warrantable when we consider the amount of attention which has been bestowed for the past hundred years upon the subject of insanity, and the care exercised by men who have achieved renown in this department in analysing causes and symptoms, arranging systems of classification, and, in fact, applying all the means of investigation which belong to any scientific inquiry, with the same methods of exactness, the same logical spirit, the same order of ability, the same industry and sincerity, as those which characterize the labors of the experi-

mental physiologist, and all the rest of the workers in departments whose combined efforts have brought the science and art of medicine to its present creditable position.

In conclusion, it may be stated that, as far as present knowledge informs us, the existence of puerperal eclampsia in a definite relation to mental disturbances is yet to be established. Farthermore, from the impossibility of dissociating it from the other morbid influences common in the puerperal state, its power as an ætiological factor will be likely to remain an unknown quantity.

DR. G. ALDER BLUMER.

Of seventy-one physicians in public asylums in the United States and Canada who have replied to a circular letter of inquiry, seven only have had experience of insanity following puerperal convulsions.

Dr. H. P. Stearns, of the Hartford Retreat, reports one case in one hundred and eighty of puerperal insanity. Patient had twenty-four convulsions shortly before admission. Her mother was insane. Patient recovered in five weeks.

Dr. W. D. Granger, assistant physician of the Buffalo Asylum, reports one case. Patient, aged 30, suffered from attacks of melancholia prior to convulsions, and twice attempted suicide. Had repeated convulsions the day before the birth of her child. Has suffered from epileptic attacks ever since; no special mental disturbance observable now.

Dr. John C. Hall, of the Friends' Asylum, Frankford, Pa., reports one case. Insanity followed in about one week after convulsions.

Dr. J. H. Callender, of the Tennessee Hospital for the Insane, declares that he frequently receives cases where puerperal convulsions are noted, but he cannot be specific as to the relation of eclampsia to the number of such cases.

Dr. C. B. Burr, of the Eastern Michigan Asylum at Pontiac, writes that of ninety-seven cases of puerperal insanity, three had convulsions preceding the attack. One other had convulsions at her second confinement, but no mental disturb-

ance; while after her third confinement she became maniacal, and had no convulsions preceding excitement.

Dr. J. W. Ward, of the New Jersey State Lunatic Asylum, reports three cases in ten years, and adds that in each there was decided hereditary predisposition to insanity. He says,— "Insanity seems to follow almost every other puerperal condition more or less frequently, but seldom eclampsia. While writing, I have visiting me a general practitioner of over twenty-five years' experience, who has had a very large obstetrical practice, and has not infrequently met with puerperal convulsions, who tells me that in that extended practice he has never known of a case of insanity following puerperal convulsions. He says that all his cases either died or went on to a full recovery."

Dr. D. Clark, of the Toronto Asylum, can remember a few cases in the asylum, but cannot lay his hands on the records.

At the State Lunatic Asylum at Utica there have been admitted during the period of my service there, from June, 1880, to date, eighty cases of insanity attributable to the puerperal state. Of this number, as far as I have been able to ascertain, but four had convulsions.

Case I. M. C., age 35. Admitted Nov. 8, 1881. Seizures ceased immediateiy after delivery, and insanity appeared six weeks thereafter. Discharged May 2, 1882, recovered.

Case II. N. M., age 19 years. Admitted April 4, 1882. Convulsions occurred two hours after normal delivery, and insanity occurred with the first convulsion. Discharged unimproved May 16, 1885.

Case III. C. H. Admitted April 17, 1882. Fifth child. Patient became insane five or six days after the convulsion; has been confined twice since then, and there has been no recurrence either of convulsions or of mania. Discharged recovered Oct. 19, 1882.

Case IV. A. S., age 32. Admitted Dec. 5, 1881. Mother insane. Had convulsions in third labor four years before admission to the asylum, when she was three weeks in a semiconscious state. Discharged unimproved, August 16, 1882.

It would seem from a consideration of these data that there is no sufficient warrant for supposing a definite relationship of cause and effect between puerperal convulsions and insanity.

My own belief is that the causes of puerperal insanity are multiple. It would seem probable, on the face of it, that convulsions indicate toxæmia, affecting the higher nerve centres seriously, and inducing a state that would predispose to insanity. The fact that eclampsia is a disease very fatal to parturient women may have had much to do with the rarity in asylums of cases of insanity from this cause.

The subject is not discussed by recent writers on insanity. Savage calls attention to the rarity of eclampsia as an antecedent condition in cases of puerperal insanity.

It may be that in cases related by less modern writers the lancet was responsible for the mental disturbance. Two cases of puerperal convulsions treated by blood-letting, in which insanity supervened, are referred to in Bucknill and Tuke; and all authors bear testimony to the important part played by anæmia as a factor in the causation of puerperal insanity. Severe post-partum hæmorrhage had occurred in at least ten out of sixty of Clouston's cases of puerperal insanity.

In a recent paper on puerperal insanity by a British alienist, the superintendent of the East Riding Asylum, there appeared the sentence, "Puerperal eclampsia is a predisposing cause of some importance." In reply to a letter of inquiry as to the author's personal experience, there came to me this frank and significant avowal: "This remark was prompted more by a conviction that it was likely to prove so, than from actual experience. I have never seen a case follow puerperal eclampsia, nor have I to my personal recollection heard details of one."

The following are quotations from the literature of the subject:

"Auch an Erkrankungen, besonders Eklampsie, können sich maniakalische Zustände anschliessen."—[Schroeder, "Lehrbuch der Geburtshülfe," Bonn, 1884, p. 832.]

"In nicht seltenen Fällen schliessen sich maniakalische Zustände an die Eklampsie an. Dieselben geben übrigens eine verhältsmässig gute Prognose."—[Schroeder, *op. citat.*, p. 728.]

"I am acquainted with several cases of puerperal convulsions which were succeeded by puerperal mania; the transition might probably be the result of the large bleedings which were necessary to subdue the primary disease."—[Dr. Ingleby in Simpson, "Clin. Lect. on Dis. of Women," Am. ed., N. Y., 1872, p. 564.]

"Puerperal convulsions, which are almost universally connected with albuminuria, are often attended—particularly when very severe in their character—with some temporary degree of incoherence, delirium, or stupefaction; but they rarely, as far as I have seen, terminate in true and established puerperal insanity. Dr. Churchill, however, states that he has seen puerperal insanity accompany or follow puerperal convulsions in more than one case, and instances of the same kind are alluded to by Drs. Reid, Merriman, Gooch, Esquirol, and others. Both are found to be dependent upon, and in some way or other connected with, the pre-existence of albumen in the urine."—[Simpson, *op. citat.*, p. 564.]

"Again, puerperal convulsions are frequently followed by puerperal mania. I have often seen this, and you will find numerous cases of the kind in the clinical reports of Johnston and Sinclair, Elliott, Hervieux, and others; and I will remark here, parenthetically, that mania follows puerperal convulsions in quite as large a number of cases where albuminuria has not existed as in those where it has been present."—[Fordyce Barker, "Puerp. Dis.," N. Y., 1874, p. 91.]

"Considering the frequent occurrence, as shown by autopsies, of œdema and anæmia of the brain, Rosenstein says,—'We are perhaps justified in regarding eclampsic convulsions as a phenomenon attending the alteration of the circulation within the brain. For, under the influence of a process like parturition, through the action of the entire muscular system, an enormous pressure is exerted upon the aortic circulation, which in the presence of a dilute serum, and acting upon the finest arterial vessels, occasions œdema and secondary anæmia of the brain, and thus may call forth convulsions.'"—[Ibid.]

"In Number XI the disease came on after puerperal convulsions, a disease generally but not always depending on cerebral congestion, and after one of those enormous bleedings commonly practised in these cases, and no morbid appearances were discovered after death in the brain."—[Gooch, "Disorders of the Mind in Lying-in Women," New Syd. Soc., 1859, p. 72.]

Discussion.

Dr. B. L. Hovey, of Monroe County.—It is not my purpose to extend this discussion beyond a reasonable time; and I will therefore briefly report two cases of eclampsia which occurred in my practice forty years ago, and three cases of recent date. My object is to show the comparative treatment of the same disease in these two periods of time. It will be recollected by the older members of the Association, that since 1846 a great number of therapeutic agents have been introduced for the management of this disease, such, for instance, as chloroform, the bromides, hydrate of chloral, etc. It will also be observed that the pathology is as new as the therapeutic agents. Forty years ago we believed that the proximate cause of eclampsia was located in the brain; and whether the convulsion was "apoplectic," "hysterical," or "eclampsia," the exciting cause was an irritation of the brain. We then were exceedingly cautious in the administration of opiates, for we feared an increased congestion from their effect. Our treatment consisted then in blood-letting, and revulsion by means of cathartics, febrifuges, cold to the head, etc.

Case I. Mrs. H., aet. 24; good healthy constitution; primipara; was taken with labor pains at 4 A. M., at full term. I saw her at 6 A. M. On my entering the room at 6 A. M., she sat quietly in a chair. Soon afterward she fell to the floor in a severe convulsion, lasting several minutes. While on the floor I tied up her arm, and bled her 12 oz. She came out of the convulsion, but remained unconscious. At 9 A. M., another convulsion; repeated the v. s., and emptied the rectum with an enema. At 11 A. M., a third convulsion; bled again; patient unconscious. It was then determined to empty the womb; labor had been going on slowly; the os was slightly dilated. A forcible delivery was made by version. The child was viable, and did well. Mother had no convulsion after delivery; returned to consciousness after twenty-four hours, and made a good recovery. Mother and child now living.

Case II. Mrs. W., the wife of a physician, a stout, healthy woman, aged 25 years; primipara; was taken in labor at full time, at 12 M.; had a convulsion; was bled from the arm 16 oz. In two hours had a second convulsion; was bled again 12 oz.; lay unconscious; bowels moved by an enema; x grs. of calomel administered by the mouth. Convulsions every two hours. This patient was eight miles from my home, and consequently I did not see her until she had been in labor fifteen hours. On examination, the os was only slightly dilated. On consultation with the husband, agreed to deliver at once. This was done by force: introducing the hand, dilating the os, grasping the feet, and turning. The child was still-born. The subsequent treatment was antiphlogistic in the full meaning of the term at that time. The woman made a good recovery, and subsequently had children with easy and natural labors.

I will pass from 1846 to 1883, leaving the interim unnoticed, except to say that pathologists and practitioners have made great advancement in this branch of medical science.

Case III. Mrs. B., æt. 33; primipara; spare in form, but usually in good health. The first symptom of labor was a convulsion. I saw her within a short time. Administered chloroform by inhalation, and kept her under its influence continually; convulsions occurring every two to three hours. Labor progressed so that at the end of eight hours the soft parts and os were dilatable, and the child delivered alive, with forceps; convulsions continued, and at the end of twenty-two hours after delivery she died.

This was a primipara.

Case IV. Mrs. R., æt. 19; primipara; had convulsions soon after labor commenced, and they recurred at intervals of one to two hours; was treated by hypodermic injections of morphia, with chloroform inhalation when spasm commenced. Eight hours after the beginning of labor, she was delivered by forceps. A very severe spasm occurred within a few minutes after delivery. A rectal injection of 40 grs. each of chloral hydrate and bromide of potassium was given; after which no further spasm. Mother and child did well.

Case V. Mrs. R., æt. 27; primipara; convulsion soon after labor commenced; hypodermic injection of morphia, $\frac{1}{2}$ gr. In two hours another spasm; repeat morphia, $\frac{1}{2}$ gr; labor progressing rapidly. Patient unconscious. Ten hours after labor began, the os was well dilated, and the child delivered by forceps, still-born. Up to this time the mother had had five severe spasms, and $2\frac{1}{2}$ grs. of sulphate of morphia, with chloroform inhalations. The convulsions continued for three hours after delivery, one each hour. At this time chloral hydrate and bromide of potassium, 40 grains each, were thrown into the rectum. No further spasm. Remained unconscious twelve hours. From this time, a rapid and good recovery.

In the last two cases, the urine was highly charged with albumen; tube two thirds filled with deposit. In thirty-six hours after delivery, only a trace was discovered.

Taking the first two cases reported, and the last two, the comparative results are the same, though the treatment was so materially different. The labor in the later cases went on much more rapidly than in the earlier ones, for dilatation was complete within the time when a forced delivery was made in the former instances.

The inference, then, is, that the measures usually adopted in recent practice are preferable, as the efforts of nature are in no way interfered with.

Dr. H. D. Didama, of Onondaga County.—In regard to cases of convulsions, I suppose it is pretty well established that arterial anæmia of the convulsion-centre is always the immediate cause, as shown by the fact that bleeding one of the lower animals to death produces convulsions. No matter how much blood we have in the venous system, ligaturing the veins does not produce this convulsion. How may such arterial anæmia be induced? It may be by venous congestion, and is in a great many instances by means of mechanical pressure, which may stop the usual amount of blood that goes to the convulsion-centre. This arterial

anæmia of the convulsion-centre may be produced by uræmic poison. We have convulsions caused by the irritation of worms, and indigestion, where there is no suspicion of uræmia. How shall we treat the cases? Not all alike. If your patient is a pale, anæmic person, you should not bleed her; she has not any blood to spare. Bleeding will not be good if there be anæmia of the convulsion-centre. For plethora, as occurs in so many cases, as occurred in Dr. Colvin's cases, as occurs in the country so often, bleeding ought to be efficient, because it relieves the venous congestion; then the convulsions cease. I would not bleed indiscriminately. Dr. Colvin found bleeding to be useful in his cases; Braun and Schroeder condemn it in toto. Now, uræmia may be present without albuminuria. Dr. Thomas says that he has seen but one or two cases where albuminuria was not present after the convulsion. This does not prove that it was present before the convulsion. If the convulsion comes on from uræmic poisoning, then the bleeding is not so important as something else. Chloroform is better; morphine is better; for we would not treat our cases alike. If we have puerperal irritation, premature delivery should be brought on.

Dr. E. R. Squibb, of Kings County, remarked that it had been customary in Brooklyn for the past six or eight years to use veratrum viride very generally in the treatment of puerperal convulsions, and regretted that more had not been said concerning it. Dr. Lloyd, he was sure, had used it in a recent case.

Dr. T. M. Lloyd, of Kings County, said that the case referred to occurred on Sunday of the present week. There had been preceding albuminuria, as there was in a former pregnancy, this being the second. The first sign of albuminuria was noticed less than a month ago, and the amount had rapidly increased. Headache was a symptom for three or four days before the occurrence of the first convulsion, which he did not witness, but saw the patient in a second one, two hours later, of a few minutes' duration, and quite severe. Shortly after labor began. Chloroform was used. Renewed convulsions seemed to be imminent with each labor pain, and although the chloroform exerted its controlling influence for perhaps two hours, the irritability of the nervous system appeared greater with every successive pain. A consultation being held, it was agreed to use the veratrum hypodermically. Ten minims were used, the pulse being at the time 108. In about twenty minutes a decided effect was observed, and in less than an hour the pulse was reduced to 38 per minute. The patient was delivered as soon as forceps could be safely applied *in utero*. There had been no recurrence of convulsions, and the pulse remained slow and regular throughout after its reduction. Chloroform was used until the termination of labor.

Dr. J. P. Garrish, of New York County, stated that out of 5,000 confinements, attended by him in private practice, including every form of

forceps delivery, he had met with but six cases of convulsions. He thought that patients should be visited occasionally during pregnancy to ascertain their general health, and that more preventive measures should be adopted. In a case of eclampsia he immediately used nitrite of amyl, which would at once quiet the convulsions and prepare the way for taking blood from the arm, unless the patient were very much emaciated and anæmic. In his experience bleeding was the remedy, and in almost every case where the patient was plethoric he would open a vein. He was opposed to the use of chloroform, which he regarded as a dangerous remedy. If used at all, it should be combined with ether, which to a great degree lessened its danger.

Dr. E. D. Ferguson, of Rensselaer County, expressed his extreme regret that Dr. Lusk was not present to close a discussion which had been notable, not only among the proceedings of this meeting, but as compared with those of medical gatherings in the United States. He did not rise to add to the discussion, which had been very thorough from almost every point of view, nor to object to any statements, but to emphasize one or two things incidentally noted. One was the remark of Dr. Lusk, in relation to the induction of labor, that whatever was done should be done without violence. The system is under the condition, as it were, of shock, in contending with the poison which is present; if to this be added the violence of a severe surgical procedure, it will be likely to turn the balance against the patient. For a number of years in the beginning of his professional life he did not see a case of eclampsia; then in the course of four or five months he saw seven. In various ways, he had seen, he presumed, thirty or thirty-five; and out of that number, with one exception, the only cases that proved fatal were those subjected to violent procedures in the induction of labor. As to tiding over the immediate danger, whether it should be done by bleeding, cathartics, or fortifying the system by chloroform or morphia, was a question for the physician to answer at the time. If morphia or opium were selected as a fortifying agent, it should be administered hypodermically. He believed that the hypodermic use of morphia had added a new agent to our materia medica; its speed gives us an effect unattainable in any other way, and a moderate dose thus administered will fortify the system against uræmic influence, while if given by the stomach, the amount required to have any control over the convulsions would be poisonous.

Dr. Colvin was reminded, by Dr. Squibb's allusion to the effects of veratrum, of three cases. In the first two the pulse was about 128. He bled in each case, but without reducing the frequency of the pulse. He then gave five minims of veratrum, which brought the pulse down to 90. In the third case the pulse was 170. Although the convulsions were post partum, occurring three or four hours after labor had terminated satisfactorily, he reduced the pulse to 120 by bleeding, and then gave the vera-

trum. He had used veratrum since without satisfactory effect. He believed that, in a great majority of cases, venesection was indicated. With regard to chloroform in obstetric cases, he had never seen the slightest trouble. He had used it in fourteen cases of eclampsia, and had administered it in eleven cases for his father, with very excellent results. He thought that parturition tolerated chloroform, as well as syphilis did iodide of potassium.

The President wished to urge upon the attention of the Association the importance of administering a cathartic in these cases, whatever method of treatment was adopted. This was a thing that ought always to be done; but very little had been said about it beyond a general commendation of laxatives and diaphoretics as useful in uræmic poisoning. No other remedy was so entirely under our control as a cathartic, compared with which diuretics, diaphoretics, etc., were unreliable. Its trustworthiness gave, as it were, a sort of scientific character to therapeutics. By no other means could a poisonous influence be eliminated from the blood as well as by a saline cathartic. If a patient be lying in such a condition that other and preferable cathartics cannot be given, death being threatened before they can operate, one, two, or three drops of croton oil should be placed on the tongue. He once had the misfortune to see a lady breathe her last in the fifth of a series of convulsions, all of which had occurred within an hour. What chance was there for life under such circumstances? The peculiar tendency to periodicity in these things was well known. If more than one convulsion occurred, they came on in about the same order—once in twenty minutes, or once in forty minutes. In the case of a woman with eclampsia in parturition there were two things in view,—to stop the existing convulsion, and to avert its recurrence. With regard to venesection, experience was abundant, though not very recent. It was the universal practice when he was a young man, and was always done in every case of eclampsia. Notwithstanding the marvellous results spoken of by Dr. Colvin, such was not the experience of every physician; relief did not always occur. The speaker knew—for he had lived in the time of phlebotomy—that blood-letting would suspend for a certain length of time almost anything. It would stop a neuralgia, and the next attack of neuralgia would be ten times as bad. It had a marvellous power of suspending certain things. It did no good in convulsions beyond stopping them for a while. It was not the cure; but if the cathartic had operated before the succeeding convulsion, that was usually the end of the case. In such cases as he had spoken of there was no time to wait for the catharsis; the effect of the eclampsia retarded the action of the cathartic. From his point of view, the cathartic was the cure, the blood-letting the temporary expedient to arrest the convulsion for the time. It might do something toward diminishing the poison in the blood; but there was a question as to its influence in this re-

spect, as there were twenty-five pounds of blood, of which only one or two were drawn. If, in this doubtful condition, he were asked what he would do to prevent the recurrence of these convulsions, he would reply that it had been his fortune often to be called in consultation in eclampsia, but he had never yet seen a case that recurred after his reaching the room with his ether sponge. In one such case, on asking the length of the interval between the convulsions, he found that in about three or four minutes the next one might be expected. The ether sponge went down over her nose, and she kept on snoring, and there it stayed. A cathartic was given, and she made a very nice recovery. The medical practitioner generally failed through his fear of using ether when the patient is snoring. In a case to which he was called at the seventh month, with the same periodicity of convulsion which is so common, he placed ether over the patient's nose, and sat there for four hours. It was his doctrine that the physician in a case of this kind has no other business; his business is to stay by the patient; and there he stayed until the cathartic had its full effect. Ether was so much safer than chloroform, that he stood aghast at the continued use of the latter. On an average, he etherised some one every day of his life, and he had never seen anything but good results. He had given patients chloroform to begin with when the ether was a little troublesome, and they had commenced to turn pale; but when a change was made to ether the pulse would become full and bounding. This was an every-day experience. With such an agent, the patient should not be allowed to have another convulsion, and would not have it if the ether were kept up, given in sufficient quantity, and given while she was snoring. In the convulsions of childhood, which were to a certain extent analogous, his custom was to give anodynes after freeing the bowels. The physician called to such a case should quiet the child, and arrest the existing convulsion with ether, then administer a cathartic as best he could, and stand by the patient just as he would by a woman with convulsions.

Nothing equalled a saline cathartic to relieve the blood, and Epsom salts stood at the head of the list. If a woman, at the seventh or eighth month, had severe headache and prodromes of eclampsia, with abundance of albumen in the urine, the administration of salts every day, and two or three times a day, so as to produce two or three passages from the bowels, would in almost every instance tide over the difficulty, the head becoming clearer, and the bad feelings passing away, because the elimination of the poison kept pace with its formation. Salines could be used with safety under such circumstances, when other drastic cathartics could not, since the former did not provoke a miscarriage. With reference to the propriety of producing miscarriage where there was persistent albuminuria, what seemed to him a good suggestion, though one not often applicable, was made in a paper which he had heard at the recent

meeting of the Toronto Medical Association, viz., that in a woman who had albuminuria before the occurrence of pregnancy, miscarriage should be induced early; that the condition was very apt to result in abortion, and in any event endangered the life of the mother so much that early interference was demanded. Dr. Moore very much doubted the advisability of inducing miscarriage previous to the seventh month, simply because the patient had albuminuria, or even one attack of eclampsia. He insisted that the persistent use of catharsis by salines would ward off the trouble, and give time to consider the expediency of producing miscarriage.

Dr. Colvin thought that the President had ignored a portion of his paper in which he spoke of cathartics. He considered the administration of a cathartic as the very next step in treatment. His preference was for Glauber's salts, which he believed to have a better action on the mucous lining of the bowel than the sulphate of magnesia.

Dr. E. R. Squibb observed that in a discussion of this subject before the Kings County Medical Society, veratrum viride was advocated as a substitute for blood-letting,—two gentlemen who had made most use of veratrum having closed the discussion by asserting that no patient should ever be allowed to die without a trial of this remedy.

On motion of Dr. E. D. Ferguson, the thanks of the Association were unanimously extended to Dr. Tyson, of Philadelphia, for his presence and participation in the discussion.

PROCEEDINGS.

THIRD ANNUAL MEETING

OF THE

NEW YORK STATE MEDICAL ASSOCIATION,

HELD AT LYRIC HALL, 723 SIXTH AVENUE, NEW YORK CITY,
NOV. 16, 17, AND 18, 1886.

FIRST DAY, TUESDAY, NOV. 16, 1886,—MORNING SESSION.

The Association was called to order at 10 o'clock A. M., by the PRESIDENT, DR. E. M. MOORE, of Monroe County.

The SECRETARY stated that it would be impossible to announce at this time the number in attendance, as the registration was still proceeding.

The Report of the Committee of Arrangements was made by Dr. J. W. S. GOULEY, Chairman. (See page 15.)

Upon motion of Dr. FERGUSON, the report of the Committee was accepted.

The PRESIDENT announced that, in departure from the regular order of proceedings, the next thing in order would be the Report of the Council.

The Report of the Proceedings of the Council was read by Dr. E. D. FERGUSON, Secretary. (See page 502.)

Upon motion of Dr. S. T. CLARK, the annual report of the Council was accepted and adopted.

The PRESIDENT announced that the annual report of the Treasurer would be deferred until Thursday.

Upon motion of Dr. M. W. TOWNSEND, it was voted that the Address of the President be deferred until a later hour.

Dr. FERGUSON read the amendments to the Constitution and By-laws, proposed at the last Annual Meeting, and moved their adoption, as set forth in Vol. II of the Transactions, pp. 558 to 560. Motion carried.

The reports of the Presidents of the Branch Associations [see page 434], and of the New York County Medical Association [see page 457], were read by title.

The PRESIDENT announced as Committee on Scientific Contributions,—

Dr. John Cronyn, Chairman, Fourth District.
Dr. L. C. Dodge, First District.
Dr. W. H. Robb, Second District.
Dr. Charles W. Brown, Third District.
Dr. E. H. Squibb, Fifth District.

The PRESIDENT, continuing, then said,—"I have the pleasure of introducing to you Prof. Parkes, of Chicago, who has taken this long journey for the purpose of being with us. We have, you see, the sympathy of the wide-spread profession of the United States.

"I also wish to introduce Dr. Hubbell, Delegate from the Massachusetts State Society to this Association. We always expect good things from Massachusetts. She has always taken the lead of the sister States in a great many matters, and never is behind any of them in scientific things."

The PRESIDENT then read his Annual Address. (See page 18.)

Dr. FERGUSON read the amendments proposed to the Constitution of the District Associations, as set forth in Vol. 2 of the Transactions, pp. 560, '61, '63.

Upon motion of Dr. FERGUSON, these amendments were adopted.

The remainder of the session was devoted to the reading and discussion of papers, according to the programme.

At 12:30 the meeting adjourned until 1:15 P. M.

AFTERNOON SESSION.

The SECRETARY announced the Nominating Committee as follows:

Dr. J. W. S. GOULEY, at large.
First District, Dr. W. H. ROBB, Dr. H. N. PORTER.
Second District, Dr. R. C. MCEWEN, Dr. E. M. LYON.
Third District, Dr. T. A. WALES, Dr. H. C. LYMAN.
Fourth District, Dr. B. L. HOVEY, Dr. S. T. CLARK.
Fifth District, Dr. H. VAN HOEVENBERG, Dr. A. L. CARROLL.

The SECRETARY requested the members of the Committee to meet in the parlor at 2:30 P. M.

The scientific work was then taken up, as per programme.

Upon motion of Dr. E. D. FERGUSON, the following resolution was adopted:

Resolved, That the thanks of this Association are extended to our confreres from without the State for their attendance at our meeting, and for valuable contributions to the important subject of shot-wounds of the intestines; that their presence here is an evidence that the bonds of professional interests are sufficient to draw together, for the common good, localities so remote as Chicago, Washington, Philadelphia, and New York.

Adjourned to 9 A. M., Nov. 17th (it being understood that a night session would be held at the Carnegie Laboratory).

Night Session.

At 8 P. M. the Association assembled in the Lecture Room of the Carnegie Laboratory, where Dr. E. G. Janeway demonstrated many of the forms of bacterial life by projections on the screen; and at the close of the lecture Dr. H. M. Biggs, assisted by others, exhibited many specimens of pathological preparations and micro-organisms. The supply of microscopes was large and the material well selected.

From attendance at this exhibition of the progress made in a comparatively new and rapidly enlarging field for medical study, as well as from conversation with many Fellows of the Association who were in attendance, the Secretary is constrained to say that this feature of the scientific work of the meeting should be repeated. He is convinced that great good will come from it, and that it will grow in popularity and usefulness.

Second Day, Wednesday, Nov. 17, 1886,—Morning Session.

The Association was called to order at 10 o'clock A. M., President Moore in the chair.

The Secretary announced that about one hundred and twenty Fellows had registered at the present time, which was equal to the registration of the previous meetings.

The Secretary read the minutes of the proceedings of November 16th.

Upon motion of Dr. Gillis, the minutes were approved as read by the Secretary.

The Secretary announced that under the head of unfinished business would be the closing of the discussion of yesterday.

Dr. Tremaine then closed the discussion on Shot-Wounds of the Intestines.

After the reading and discussion of the papers set down for the session, Dr. Didama read the following Memorial, as an expression of the feeling of the Association in reference to the loss it had sustained in the death of Dr. Austin Flint:

In memory of Dr. Austin Flint.

To the Medical Profession throughout the country and the world: The sudden death of Dr. Austin Flint, while in the possession of unimpaired faculties and at the zenith of his influence, was a loss which cannot be repaired. But the blow falls with special heaviness upon the New York State Medical Association, of which he was a prominent Founder and a

Fellow of unflagging zeal and industry. In unison with the profession at large, we mourn the departure and do honor to the memory of the great and good man and the learned physician; but we grieve most of all that we shall see here no more the genial face, nor hear the thrilling voice and wise counsels, of our beloved personal friend. Free from all self-seeking, laboring unceasingly for the welfare and advancement of a profession which he had enriched and dearly loved, and with whose integrity and honor he believed the best interests of humanity to be firmly linked, Dr. Flint's worthiness and eminence were gladly recognised by his professional brethren, and fitly rewarded by the highest gifts in their power to bestow. The gentlemanly and inspiring presence of our friend is no longer with us; but his unblemished character, his habits of accurate industry, his unswerving truthfulness, his refined manners, remain for our admiration and imitation, while his abundant benefactions to the profession and to the world shall live on forever.

Upon motion of Dr. Ferguson, the remarks of Dr. Didama were adopted as the sense of the Association.

The following resolutions, in reference to the death of Prof. F. H. Hamilton, were offered by Dr. Charles A. Leale:

Whereas, The medical profession has sustained a sad bereavement in the death of Professor Frank Hastings Hamilton, A. M., M. D., LL. D., one of the Founders of the New York State Medical Association, which occurred at his residence on the 11th day of August, 1886; and

Whereas, It is eminently proper for us, in our associated as well as private relations, to express our great admiration for one who has done so much to elevate American surgery; therefore,—

Resolved, That, as a society representing the profession throughout the State which he labored so hard to advance, we add our tribute of loving esteem.

Resolved, That Dr. Hamilton, from his preëminent talents, and his position as a teacher, writer, and practitioner, covering a period of over half a century in this State, was enabled, through his accurate records, to disprove many erroneous assertions, and materially cause the restoration of the treatment of fractures and dislocations to legitimate surgery, and has thereby relieved the profession from unwarrantable litigations.

Resolved, That the humanity, benevolence, and fixedness of purpose exhibited during many years of constant professional toil, often under the most trying circumstances, ever with the sincere desire to promote his art and benefit mankind, have ennobled his character, and left to us a name worthy of our highest emulation.

Resolved, That the example of his life; diligent study in early youth; manifest desire always to acquire knowledge, even at great personal expense and trial, by carefully searching the museums of America and Europe for anatomical specimens to establish authorities and to settle disputes in surgical pathology; his translations of foreign medical works; his careful and lucid teachings, united with a stern integrity ever to be truthful; and last, but not least, his monumental volumes on "Fractures and Dislocations," which have been the standard works recommended by colleges at home and abroad, and remain to-day unequalled in surgical

literature, having been translated into many foreign languages, and are the acknowledged authorities wherever medicine and surgery are taught;—these, with many other noble traits, have justly endeared his memory to every true and faithful member of our profession, and have caused his name to occupy a place upon the scroll of the most illustrious men of the first century of American history.

Dr. Frederick Hyde moved the adoption of the resolutions offered by Dr. Leale, and added the following remarks:

"Yet one word I feel it would be a privilege to me to say. Dr. Hamilton and myself were associated intimately in early life; we were medical class-mates, and were intimate from that time on. And while abroad, in 1884, I took great pleasure in listening to the commentaries of the surgeons abroad upon my countryman, Dr. Hamilton. They dwelt largely upon his books, and especially upon his one book on 'Fractures and Dislocations.' To hear the remarks made by the surgeons abroad—the high commendations of that work—was very gratifying to me. They acknowledged that they had nothing equal to it; that they adopted it as a standard work, as we formerly did the great work of Sir Astley Cooper. He had superseded all others, in Europe as well as here. A year ago now it was my pleasure to visit my good friend the Doctor. You all remember that he was in the meeting, but he was in ill health. He could not read his paper because of the loss of his voice. Myself and one of his distinguished pupils, at his earnest request, paid him a visit. It was a precious visit. I have thought of it more in connection with his death,—that we were favored people that we could be in his presence and speak to him as we did."

Motion carried.

Adjourned to 1:15 p. m.

Afternoon Session.

The afternoon session was devoted to the reading and discussion of papers.

Dr. John P. Garrish extended an invitation to the Fellows of the Association to visit the Exhibition of the American Institute.

Adjourned to November 18, 9 o'clock a. m.

Third Day, Thursday, Nov. 18, 1886,—Morning Session.

The Association was called to order by President Moore, at 10:15 o'clock.

The Secretary stated that it was impossible for him to announce the exact number of Fellows in attendance, but it was about two hundred.

The Report of the Council was read by the Secretary, who moved its acceptance and adoption by the Association.

Motion carried. (See page 502.)

The Annual Report of the Treasurer was then read by the SECRETARY, and, on motion by Dr. FERGUSON, was received, and referred to a committee for audit.

The Treasurer's report is as follows:

JOHN H. HINTON, M. D., *Treasurer*,
In account with New York State Medical Association.

Report from Nov. 9, 1885, to Nov. 16, 1886.

GENERAL FUND.

Receipts.

599⅔ dues,	$1,799.00		
74 initiation fees,	370.00		
119 assessments,	238.00		
Sale of 13 copies Transactions,	32.50		
Postage (A. H. Crosby),	.10		
Amount added from Library Fund,	21.63		
		$2,461.23	
Balance in General Fund Nov. 9, 1885,		193.64	
			$2,654.87

Disbursements.

Printing,	$154.70	
Reporting meetings,	75.00	
Express and postage,	52.28	
Insurance on Library,	20.00	
Engraving badge,	12.00	
Account rent Lyric Hall,	10.00	
Rent of Library 56 weeks,	56.00	
Furniture,	21.48	
Sundries,	6.55	
D. Appleton & Co., 2d vol. Transactions,	1,956.47	
		$2,364.48
Balance in General Fund Nov. 16, 1886,		$290.39

BUILDING FUND.

Dr. W. C. Pryor, donation,	$100.00	
Balance in Building Fund, Nov. 9, 1885,	315.00	
		$415.00
Nov. 16, 1886, balance in Treasury,		$705.39

Consisting of—

Building Fund in Central Trust Co., of New York,	$415.00
Cash in hands of Treasurer,	290.39
Total,	$705.39

JOHN H. HINTON, *Treasurer.*

The PRESIDENT appointed as Auditing Committee, Drs. S. T. Clark, B. L. Hovey, and William Gillis.

The PRESIDENT called for the report of the Nominating Committee.

The report of the Nominating Committee was presented by Dr. VAN HOEVENBERG, as follows:

Mr. President and Fellows of the New York State Medical Association: Your Committee, appointed to make nominations for officers of the Association, do respectfully report as follows, viz.:

For President,

Dr. ISAAC E. TAYLOR, of New York.

For Vice-Presidents,

1st Dist., Dr. JOHN P. SHARER, of Herkimer
2d Dist., Dr. L. C. DODGE, of Clinton.
3d Dist., Dr. GEO. W. AVERY, of Chenango.
4th Dist., Dr. DARWIN COLVIN, of Wayne.

For Secretary,

Dr. E. D. FERGUSON, of Rensselaer.

For Treasurer,

Dr. JOHN H. HINTON, of New York.

For Director of the Library,

Dr. J. W. S. GOULEY, of New York.

For Members of the Council,

1st Dist., Dr. HENRY W. PORTER, of Oneida.
2d Dist., Dr. ROBT. C. McEWEN, of Saratoga.
3d Dist., Dr. WILLIAM FITCH, of Tompkins.
4th Dist., Dr. JOHN S. JAMISON, of Steuben.
5th Dist., Dr. ALFRED L. CARROLL, of Richmond.

All of which is respectfully submitted.

B. L. HOVEY, *Chairman.*

H. VAN HOEVENBERG, *Secretary.*

It was moved that the Secretary cast the ballot for the Association for all the officers nominated by the Nominating Committee.

Carried.

The SECRETARY announced that he had cast a ballot for the officers of the Association for the ensuing year, in accordance with the report of the Nominating Committee.

The PRESIDENT announced that, the Secretary having so cast his ballot, these gentlemen were elected.

Before adjournment, the President renewed to all present the invitation to a supper, to be given by the Council in the evening, and also called attention to a circular, issued by the American Medical Association, in relation to the Rush Monument subscription, requesting a contribution of one dollar from every physician.

Adjourned for half an hour.

AFTERNOON SESSION.

The Association was called to order by the PRESIDENT at 1:30 o'clock.

The afternoon was devoted to a Discussion on Eclampsia.

The Auditing Committee reported as follows:

To the New York State Medical Association: Your Committee, appointed to examine the accounts of the Treasurer, as set forth in his report, beg leave to report that they have carefully examined the same, and find them correct.

SIMEON TUCKER CLARK,
B. L. HOVEY,
WM. GILLIS,
Committee.

NEW YORK CITY, Nov. 18, 1886.

On motion, the report was adopted.

The SECRETARY asked that the reading of the minutes of the meeting be dispensed with, and moved that the Association adjourn until the next Annual Meeting.

President MOORE. Before I put that motion, I wish to congratulate the Association upon the very successful meeting we have had.

The motion was then carried; and at 4:30 P. M. the Association adjourned.

E. D. FERGUSON, *Secretary.*

REPORTS OF THE DISTRICT BRANCHES.

FIRST DISTRICT BRANCH.

ANNUAL MEETING.

The second annual meeting of the First District Branch was held at the Girvan House, Little Falls, on July 27, 1886.

The President being absent, Dr. Eli Fox was made chairman *pro tem.*

By resolution—the Executive Committee not having met—an assessment of one dollar was levied on each of the Fellows of the Branch.

Dr. J. P. Sharer, Chairman of the Committee of Arrangements, then welcomed the Association to Little Falls, and explained the arrangements made for the meeting.

The Committee on By-Laws reported that an uniform set of by-laws had been agreed upon for the five Branches, and presented a copy thereof. Upon motion the report of the committe was accepted, the by-laws submitted were adopted, and the committee was discharged.

Dr. Ferguson, Corresponding Secretary of the State Association, announced that it was expected that the second volume of Transactions would be issued soon.

Dr. Ezra Graves read a paper on Pneumonia, in which he discussed fully the questions connected with its origin and treatment. The paper was discussed by Drs. Ferguson and Booth.

Dr. Ogden Backus, of Oneida County, read a paper on General Paresis, basing his description of the disease and its pathology largely on the cases observed in the Utica Asylum. At the close of the reading a general interest in the subject was shown by numerous questions propounded by the Fellows present, and answered by Dr. Backus.

Dr. R. N. Cooley, of Oswego County, then reported a case of lithotomy, and commented upon the relationship between lithotomy and litholapaxy.

Dr. Robb, of Montgomery County, having been obliged to leave the meeting, had left specimens of uterine polypi, which were exhibited.

Adjourned for dinner, which was had at the Girvan House, under the hospitable management of the Fellows residing in Little Falls.

After dinner, Dr. Ferguson, of Rensselaer County, exhibited a kidney removed for pyonephrosis, and commented upon nephrectomy and other operations upon the kidney.

Drs. Sutton and Booth were appointed a committee to select between Rome and Utica as the next place of meeting, and the present Executive Committee was reëlected. Nineteen Fellows were present.

Adjourned.

WILLIAM GILLIS, *President.*
WILBUR H. BOOTH, *Secretary.*

SECOND DISTRICT BRANCH.

ANNUAL MEETING.

The President of the Second Branch would report that the Branch is vigorous and growing, that the intensity of interest in the cause manifested by the attendance and work done, as appears in the minutes below, plainly shows that although it must always remain second in name, it does not intend to be second in anything else; that while but two years old, it evinces a precociousness which, were it not under direct control of the parent Association, might be alarming, but under present discipline, with its vigorous constitution, it bids fair to be able honestly to claim the promise that its "days may be long" through the honor it pays to the parent organisation.

The Secretary's minutes are hereunto annexed.

H. C. Van Zandt, *President.*

The second annual meeting of the Second District Branch was held in Harmony Hall, at Troy, on June 22d, 1886.

The meeting was called to order by the President, Dr. H. C. Van Zandt, at 10:30 A. M.

The Secretary read the minutes of the first meeting, which were approved.

The Chairman of the Committee of Arrangements, Dr. E. D. Ferguson, then reported the provisions made for the meeting: That the meeting consist of a morning and afternoon session, with a recess, during which the Committee of Arrangements would entertain the Fellows, delegates, and invited guests at lunch in the adjoining hall. He also expressed regret that in the printed list of the Committee of Arrangements the name of Dr. Rousseau, who had given efficient aid to the committee, had been omitted. The report of the committee was accepted.

The President then read his Annual Address, dealing with the relations of the profession to the public.

Dr. Ferguson, as delegate to the other Branches, reported that he had attended the meetings of the Third and Fourth Branches, the attendance at which had been large and the scientific work of a high order, but that a common criticism might be made of all the meetings so far held,—the number of papers offered had been too great for proper discussion. It was a fault, however, to be preferred to a paucity of material.

Dr. McDonald then made his annual report as Treasurer, which, upon motion, was accepted and adopted.

The Committee on By-Laws then reported, and, upon motion, the by-laws drafted by a joint committee of the five Branches were adopted.

Dr. Ferguson, of Rensselaer County, then read a paper entitled "Some Considerations Relating to Cardiac Sounds and Murmurs," in which the method of the production of the sounds and murmurs, and their recognition and interpretation, were dwelt upon, notably as relates to the recognition of the sound made by each valve.

A recess was then taken to enable the Fellows present from each county to select a member of the Nominating Committee, and during the recess Dr. Finder, of Rensselaer County, demonstrated the circulation of blood in the web of the frog's foot.

Upon reassembling, the following Nominating Committee was announced:

Dr. R. H. Sabin, Albany County.
Dr. Thomas Wilson, Columbia County.
Dr. Isaac de Zouche, Fulton County.
Dr. Robert Selden, Greene County.
Dr. John Parr, Montgomery County.
Dr. C. H. Burbeck, Rensselaer County.
Dr. R. C. McEwen, Saratoga County.
Dr. H. F. Kingsley, Schoharie County.
Dr. F. J. Hinds, Washington County.

The Association then adjourned for lunch.

The afternoon session was called to order at 1 P. M., and was opened by a paper by Dr. R. C. McEwen, of Saratoga County, on "Some Observations on the Mineral Waters of Saratoga," referring to the necessity for some definite plan and medical supervision in their use.

The paper was discussed by Drs. Gouley, Ferguson, and Hannan.

Dr. W. W. Seymour, of Rensselaer County, then read a paper entitled "Pneumonia, Past and Present," in which he advocated the idea of its being infectious in its nature, and possibly in some forms contagious, and that no specific plan of treatment could be adopted, but must vary with patient and season, and cited illustrative cases.

The subject was discussed by Drs. Skinner and Hannan.

Dr. E. M. Moore, President of the State Association, was then introduced, and addressed the meeting in relation to the objects of the State and Branch Associations.

Drs. Finder and R. H. Sabin then presented pathological specimens.

The Committee on Nominations reported the following for the Executive Committee for the ensuing year, viz.,—

Dr. Samuel Peters, Cohoes, Albany County; Dr. Thomas Wilson, Claverack, Columbia County; Dr. Isaac de Zouche, Gloversville, Fulton County; Dr. Robert Selden, Catskill, Greene County; Dr. H. M. Leach,

Glen, Montgomery County; Dr. Z. Rousseau, Troy, Rensselaer County; Dr. R. C. McEwen, Saratoga Springs, Saratoga County; Dr. James Reagles, Schenectady, Schenectady County; Dr. H. F. Kingsley, Schoharie, Schoharie County; Dr. F. J. Hinds, Salem, Washington County.

On motion, the Secretary was directed to deposit the ballot, and the candidates reported by the Nominating Committee were declared elected.

The next paper was by Dr. S. H. French, of Montgomery County, entitled "Random Notes on Practical Microscopy," in which he discussed the varieties of instruments in general use, and the practical application of the microscope in examinations of drinking-water, of the urine for bacteria, etc.

The last paper was by Dr. S. Peters, of Albany County, on "Micro-Organisms in Gynæcological Practice," discussing the relations of bacteria to disease, the methods of destroying them, and dwelling particularly upon "aseptic" as contrasted with "antiseptic" management of gynæcological cases.

A communication was received from the Executive Committee fixing Schenectady as the place for the third annual meeting.

Forty-three Fellows and eight delegates registered.

Adjourned.

C. H. Burbeck, *Secretary.*

The Executive Committee of the Second District met at Harmony Hall, Troy, at 3 P. M., June 22, 1886.

Present, Dr. H. C. Van Zandt, President, and Drs. Peters, de Zouche, Robert Selden, Leach, Rousseau, McEwen, Reagles, and Hinds.

Upon motion, Dr. C. H. Burbeck was elected Secretary, and duly installed.

After discussion, it was decided to hold the next annual meeting at Schenectady, and the Fellows residing in Schenectady were appointed a Committee of Arrangements.

Forty-eight Fellows were present and registered.

Adjourned.

H. C. Van Zandt, *President.*
C. H. Burbeck, *Secretary.*

THIRD DISTRICT BRANCH.

ANNUAL MEETING.

The second annual meeting of the Third District Branch was held at the court-house in Binghamton, June 17, 1886, at 10 A. M. The President, Dr. Frederick Hyde, called the meeting to order, and the minutes of the previous meeting were read and approved. Fifty-nine names of Fellows and delegates were enrolled as in attendance at this meeting.

Dr. Orton, Chairman of the Committee of Arrangements, made a report, welcoming the Fellows and invited guests, and announced the programme for the day.

The President then read his Annual Address, after which the Secretary made the report of the Executive Committee; and it was received and approved.

Dr. Caleb Green read a paper on "Notes on Some Forgotten or Much Neglected Remedies and Therapeutic Measures." Discussed by Dr. Ely Van de Warker of Syracuse, Dr. J. G. Orton of Binghamton, Dr. E. D. Ferguson of Troy, Dr. C. W. Brown of Elmira, Dr. H. O. Jewett of Cortland, Dr. Gilbert N. Birdsall of Brookfield, Dr. F. W. Ross of Elmira, Dr. Elias Lester of Seneca Falls, Dr. H. D. Didama of Syracuse, Dr. Lyman of Sherburne, and Dr. Farrington of Binghamton.

Dr. H. C. Hendrick read a paper on "The Third Stage of Labor, with Special Reference to Retained Placenta." Discussed by Dr. C. W. Brown of Elmira, Dr. J. S. Elder of Lysander, Dr. H. O. Jewett of Cortland, and Dr. L. M. Johnson of Greene.

Dr. Jennie Stevens Elder then read a paper entitled "The Ideal Physician." Discussed by Dr. F. W. Putnam of Binghamton, Dr. E. Lester of Seneca Falls, Dr. F. W. Ross of Elmira, and Dr. E. D. Ferguson of Troy.

Dr. Frank W. Ross read a paper on "Rectal Concretions." Discussed by Dr. E. H. Wells of Binghamton.

Dr. S. M. Hand read a paper on "Aphasia." Discussed by Dr. F. W. Ross, Dr. C. W. Brown, Dr. C. F. MacDonald, Dr. E. Lester, Dr. Frederick Hyde, and Dr. Burr.

The Committee on Nominations then reported as follows: The committee would recommend the name of Dr. Charles W. Brown, of Elmira, for Secretary and Treasurer; the place of next meeting, Elmira.

As members of the Executive Committee in the several counties, the following names were presented:

Broome County, S. P. Allen, M. D.; Cayuga County, Carlos F. Mac-

Donald, M. D.; Chemung County, F. W. Ross, M. D.; Chenango County, H. C. Lyman, M. D.; Cortland County, Caleb Green, M. D.; Madison County, O. W. Burhyte, M. D.; Onondaga County, Robert Aberdein, M. D.; Otsego County, L. H. Hills, M. D.; Tompkins County, William Fitch, M. D.; Tioga County, W. L. Ayer, M. D.; Seneca County, Elias Lester, M. D.; Schuyler County, W. P. Broderick, M. D.; Delaware County, George C. Smith, M. D.

The Secretary was authorised to fill any vacancy.

Dr. Carlos F. MacDonald read a paper on "Two Cases of Trephining for Traumatic Epilepsy." Discussed by Dr. E. Lester and Dr. Frederick Hyde.

Dr. E. Lester read a paper on "Splenic Leucocythæmia."

Dr. A. R. Nicholson read a paper on "Oxaluria." Discussed by Dr. J. S. Elder and Dr. F. W. Ross.

Dr. J. M. Farrington read a paper on "The Shady Side and the Sunny Side of the Practice of Medicine."

The President, Dr. Frederick Hyde, remarked that he had heard fears expressed that the papers announced were too many for the time of the session: it had turned out, however, that the list had been gone through. He thought that the day's meeting had been a very profitable one; and he was reminded, as the day had rolled around, with so good an attendance and a product of so much value, of what had been done at the last meeting, and of what all the branches of the Association had been doing. And the retrospect showed how fortunate had been the plan of organisation adopted in the formation of this new Association: the result had proved it. Its success was marvellous, outspread over this great state, and holding a post of honor. He exhorted all to stand as brothers in the service of a profession, honorable and an honor to the state and to the country. He thought it might well be said that the labor of organisation had been repaid; that there was no reason to regret what had been done,—but rather to rejoice in it, and in the reflection that the Association was recognised as a part of the great American profession, and of the profession at large of all the world.

Dr. F. W. Ross, of Elmira, offered a resolution, thanking the Committee of Arrangements for the excellent entertainment given to the Fellows of the Association.

[At 1:30 P. M. the Association adjourned to the Hotel Bennett for dinner].

On motion, the Association adjourned.

FREDERICK HYDE, *President.*
CHAS. W. BROWN, *Secretary.*

The third meeting of the Executive Committee of the Third District Branch of the New York State Medical Association was held in the office

of Dr. C. B. Richards, in Binghamton, on Wednesday, May 19th. Members present,—Drs. C. B. Richards, Frederick Hyde, H. O. Jewett, W. R. Laird, George W. Avery, J. G. Orton, and Charles W. Brown.

On motion of Dr. Avery, the following were named as a Committee of Arrangements for the meeting in June next: J. G. Orton, M. D.; C. B. Richards, M. D.; S. P. Allen, M. D.; C. W. Greene, M. D.; J. H. Chittenden, M. D.; F. W. Putnam, M. D.

Motion carried that a tax of one dollar be collected from each Fellow registering, to defray the expenses of the meeting.

On motion, the Secretary was authorised to employ a stenographer for the June meeting.

The Treasurer made the following report: Total receipts of Syracuse meeting, $30.00; paid for stationery, printing, and postage, $28.58, leaving a balance in the treasury of $1.42.

On motion, adjourned to meet at Hotel Bennett, on the evening of June 16th.

CHARLES W. BROWN, *Secretary.*

The fourth meeting of the Executive Committee of the Third District Branch of the New York State Medical Association was held at Hotel Bennett, in Binghamton, on the evening of June 16th. Members present,—Drs. C. B. Richards, G. W. Avery, Gilbert Birdsall, A. D. Head, J. K. Leaning, J. M. Farrington, J. G. Orton, and T. A. Wales.

The minutes of the previous meeting were read and approved.

The Treasurer's report showed,—Expenses for printing, stamps, etc., since the last meeting, $12.85; amount in treasury at last meeting, $1.42; leaving a balance due the Treasurer of $11.43.

The following members were appointed as a Committee on Registration: Drs. J. H. Price, F. W. Putnam, T. A. Wales, C. W. Greene, Ely Van de Warker, Caleb Green.

On motion, adjourned.

CHARLES W. BROWN, *Secretary.*

FOURTH DISTRICT BRANCH.

ANNUAL MEETING.

The second annual meeting was held at the Genesee House, in the city of Buffalo, on Tuesday, May 11, 1886.

The meeting was called to order at 10:30 o'clock A. M., by the Secretary, who nominated Dr. J. C. Greene for President *pro tem.*, in the absence of President Moore.

Upon motion, Dr. J. C. Greene was unanimously elected President *pro tem.*

At the request of the President, the Secretary read the following letter:

ROCHESTER, N. Y., May 10, 1886.

Fellows of the Fourth Branch of the New York State Medical Association:

I have never felt the deep regret at not being able to attend a meeting of a medical society that I now experience with reference to your meeting to-morrow. I had hoped to address you with the feeling of the most profound assurance of the success of our movement, and also to discuss the causes of the present disruption of the profession in the state of New York. Revolutions, rebellions, and even anarchists' riots are not unmixed evils. They are sometimes necessary to bring the community, and the profession as a part of it, to a clear understanding of the proper relations that men bear to each other. Our position is the result of the experience of the profession, that no compromise can be made with quackery, even in its mildest and most insidious forms. "Pitch cannot be handled without defilement to the hand." But "l'homme propose, et Dieu dispose." A few days since I was laid flat upon my back with articular rheumatism, and as it affects the foot, I am still unable to stand.

Hoping and believing that your meeting will be the complete success that we have all anticipated, I remain

Fraternally yours,

E. M. MOORE.

It was moved by Dr. Briggs that the letter from Professor Moore be received, filed, and spread upon the minutes. The motion was carried.

The Committee of Arrangements reported that the arrangements of the day were for two sessions, one in the forenoon and one in the afternoon; that dinner could be had at the Genesee, at one dollar per plate; that the assessment this year would be fifty cents per member.

Upon motion, the report of the committee was received.

Upon motion of Dr. Andrews, it was voted that the dinner hour be fixed at 1 o'clock.

The report of the Treasurer was called for, and read as follows:

RECEIPTS.

39 assessments,	$39.00

DISBURSEMENTS.

175 circular envelopes,	$ 2.02	
Addressing do.,	.30	
President J. C. Greene, for expenses,	20.00	
200 copies of By-Laws,	8.00	
Bigelow Bros., printing,	3.75	
Printing circulars,	.75	
Postage,	.50	
Bigelow Bros., printing,	2.00	
100 stamped wrappers,	1.10	
300 stamped envelopes,	3.36	
		$41.78

WILLIAM H. THORNTON, *Treasurer.*

Upon motion of Dr. Andrews, the report of the Treasurer was accepted.

The report of the Committee on By-Laws was called for.

Dr. Strong reported that the committee had acted in conjunction with similar committees from each of the other branches. The result had been printed and circulated among the Fellows.

A motion by Dr. Andrews, that the report of the committee be accepted and the committee discharged, was carried.

Upon motion of Dr. Thornton, it was voted that the by-laws, as reported by the committee, be adopted as the By-Laws of this Branch Association.

The Secretary read the minutes of a preliminary meeting of the Buffalo Fellows of the Branch, held at the Genesee, April 13th, 1886.

Dr. Ferguson explained to the meeting the mode of joining the State Association.

Dr. Briggs reported for the Committee on Programme, that the committee had contemplated having the programme printed before the opening of the meeting, but owing to the non-receipt of titles, it had not been printed. They now had ten papers which were ready to be presented to the Association.

The first paper was presented by Dr. J. B. Andrews,—"A case of Morphia and Cocaine Habit."

The paper was discussed at length by Dr. Stockton.

Dr. Roswell Park read the next paper, entitled "Concerning Bacteria and Their Cultivation," and presented a number of interesting specimens of bacteria-culture.

Dr. A. A. Hubbell presented a paper entitled "Congenital Occlusion of the Posterior Nares."

Dr. Andrews extended an invitation to the Fellows of the Association to visit the State Insane Asylum.

Upon motion of Dr. Ferguson, it was voted that the authors of all the papers presented at the meeting should be at liberty to publish them in any regular periodical.

Dr. Lynde moved that Dr. Hubbell's paper be referred to the State Association for publication. Carried.

In discussing the paper, Dr. Bailey reported a case of occlusion of the anterior nares.

Upon motion of Dr. Thornton, the meeting adjourned till 2 o'clock P. M.

AFTERNOON PROCEEDINGS.

Dr. S. T. Clark, of Lockport, presented a case of abdominal tumor for diagnosis, which was examined by several of the Fellows present.

Dr. Rogers presented a paper entitled "Cholera, a Neurosis-Hæmorrhage Theory."

The following Nominating Committee were then appointed from their respective counties: Wm. C. Bailey, Orleans County; C. H. Woodward, Genesee County; B. T. Kneeland, Livingston County; O. A. Tompkins, Cattaraugus County; T. D. Strong, Chautauqua County; George M. Palmer, Wyoming County; A. Dagenais, Erie County; E. M. Moore, Jr., Monroe County.

The Nominating Committee reported, recommending the following named gentlemen as members of the Executive Committee for the year 1886–'87: J. A. Stephenson, Alleghany County; H. J. Dean, Chautauqua County; J. B. Andrews, Erie County; C. H. Woodward, Genesee County; B. T. Kneeland, Livingston County; B. I. Preston, Monroe County; W. Q. Huggins, Niagara County; J. T. Smith, Ontario County; William C. Bailey, Orleans County; John S. Jamison, Steuben County; C. G. Pomeroy, Wayne County; Z. J. Lusk, Wyoming County; David M. Smith, Yates County.

Upon motion, the report of the Nominating Committee was accepted and adopted.

Dr. George E. Fell presented a paper upon "Adulteration of Fats," which he illustrated by colored plates.

Dr. E. M. Moore, Jr., read a paper entitled "A Peculiar Case of Luxation of the Jaw."

Dr. A. M. Barker presented a paper upon "The Asymmetry of Lower Limbs and Its Relation to Shortening in Fracture."

Dr. Lynde, Chairman of the Committee of Transportation, reported that by obtaining a certificate from the Secretary a reduction of one third could be secured on the return fare on the B. N. Y. & P. R. R. and the B. R. & P. R. R.

A paper was then presented by Dr. U. C. Lynde; subject,—"Measurement of the Femur when Bent or Out of Line."

Upon motion, it was voted to tender to Dr. Ferguson the thanks of the Association for his attendance, and for the kindly words he had uttered while present.

The Association then adjourned.

E. M. Moore, *President.*
William H. Thornton, *Secretary.*

EXECUTIVE COMMITTEE.

The Executive Committee met at the Genesee House, on May 11th, at 3 o'clock P. M., a quorum being present.

Upon motion, Dr. William H. Thornton was reëlected Secretary.

Rochester was designated as the place for the next annual meeting, and Drs. B. L. Hovey and E. M. Moore, Jr., were appointed a Committee of Arrangements, with power to add additional members.

The Executive Committee then adjourned.

William H. Thornton, *Secretary.*

FIFTH DISTRICT BRANCH.

The third special meeting of the Fifth District Branch was held in the Common Council Chamber, Yonkers, on Tuesday, March 23, 1886. Meeting called to order by the President, Dr. J. G. Porteous, at 2:15 P. M.

By permission of the meeting the programme was somewhat altered by the reading of the minutes of the last meeting, which were approved and adopted, and by permitting Dr. Husted to read his remarks on the late Dr. Collins at this time.

Dr. J. P. Garrish then read his paper on "The Physician and the Pharmacist, their Relative Duties."

Next Dr. A. L. Carroll read his paper on "A Case of Meningeal Extravasation, with Curious Localisation of Nerve-Symptoms."

Dr. J. W. S. Gouley then read his paper on "Sacculation and Perforation of the Bladder as consequences of Chronic Retention of Urine." Discussed by Drs. Eager, Garrish, and the author.

Under the head of Voluntary Communications the Secretary regretted to have to announce officially to the Branch the death of five of its Fellows:

Three "Founders:" Drs. Desault Guernsey, of Amenia, Dutchess County; I. G. Collins, of Sing Sing, Westchester County; Austin Flint, Sr., of New York City.

Two "original" Fellows: Drs. Isaac Purdy, of Mongaup Valley, Sullivan County; Gaspar Griswold, of New York City.

Dr. G. H. Codding then read his biographical notice of the late Dr. Desault Guernsey. (See page 532.)

Dr. T. W. Bennett was not present to read his notice of the late Dr. Isaac Purdy, but he had previously handed his remarks to the Secretary, who read them by title.

The Secretary then moved that these notices be transmitted to the parent Association, with the recommendation that they appear in the Annual Transactions.

Dr. Gouley here interposed the information from the Council that the Presidents of the Branches had been constituted a Committee on Necrology to take cognisance of all deaths in their Districts. The Secretary then withdrew his motion.

It was the intention of Dr. E. G. Janeway to be present at this time to make some appropriate remarks on the death of Drs. Austin Flint and Gaspar Griswold, but not being on hand Dr. Carroll moved that a committee be appointed to draft and publish a few fitting remarks, to appear

in the medical journals, on the great loss we sustain in the death of our distinguished founder, Dr. Austin Flint.

The President appointed Dr. Carroll and the Secretary.

Dr. Leale stated that at the last meeting of the N. Y. County Medical Association a brief memoir was adopted and printed in regard to Dr. Flint. He read the memoir, and made a few further remarks.

Dr. Porter called the attention of the Fellows present to the memorial meeting to be held in April by the New York County Medical Association, and felt sure that he expressed the desire of that Association in extending a hearty welcome to all Fellows of this Branch.

Dr. Leale seconded Dr. Porter in this invitation.

The President then moved that the meeting go into executive session.

The Secretary read the report of the Executive Committee.

The following report of the Committee on Common By-Laws was then read and approved:

Your Committee on Common By-Laws met similar committees from the other four branches, and after some discussion the whole committee made a report to the parent association. The report was accepted and adopted by that body, and the by-laws thus approved were ordered to be printed and distributed to each branch for final approval.

WM. GOVAN,
S. S. PURPLE,
E. H. SQUIBB,
Com. of the 5th Dist. Branch.

The Secretary stated that he had distributed by mail one copy of the new by-laws to each Fellow of the Branch, but if any Fellow had failed to receive his copy he could obtain one from the President's desk. As each Fellow by this time had had ample opportunity to examine the by-laws as submitted, the Secretary now moved their adoption, to take effect at our annual meeting of this year.

Seconded, and carried unanimously.

Dr. F. U. Johnston reported for the Registration Committee that he had collected $13 from the Fellows present as assessments. The following report, with accompanying resolution, was read:

YONKERS, N. Y., March, 1886.

To the President and Fellows of the Fifth District Branch, N. Y. State Medical Association:

The Committee of Arrangements for the third special meeting respectfully submit the following report:

Owing to the distance that separated the residences of its members, the work of the committee was done by correspondence. In response to a request of the committee, the common council of this city granted us permission to use its chamber for the purpose of holding this meeting, free of charge. The hour of 2 P. M., being deemed most convenient to most of the Fellows, was chosen for calling the meeting to order.

Arrangement has been made with a neighboring restaurant to furnish meals to Fellows at a reasonable cost. The arrangements of the committee have been reported to the Secretary. Your committee recommend the passage of the following resolution, and that a copy of it, signed by the President and Secretary, be sent to the common council.

Resolved, By the Fifth District Branch of the N. Y. State Medical Association, that the thanks of the Association be and are hereby tendered to his honor the mayor, and to the honorable the common council of the city of Yonkers, for the courtesy extended to the Association in granting the use of the common council chamber for the purposes of this meeting.

Respectfully submitted,

R. J. Southworth,
N. C. Husted,
R. B. Coutant,
H. E. Schmidt,
Committee of Arrangements.

The resolution was seconded and carried unanimously.

The meeting then adjourned at 4:30 P. M., to next meet in Kingston.

The register showed twenty-six Fellows and one delegate present.

E. H. Squibb, *Secretary.*

The fourth special meeting of the Fifth District Branch was held in the rooms of the Young Men's Christian Association, Rondout, on Tuesday, June 15, 1886.

Meeting called to order by the President, Dr. J. G. Porteous, at 1:10 P. M.

The Secretary announced that the Executive Committee had appointed Drs. W. B. Eager and J. H. Hinton to act with the Secretary as Registration Committee, and had fixed the assessment for this meeting at fifty cents. Attention was called to the ruling of our by-laws, that neither delegates nor invited guests shall be assessed. Dr. Thomas Wilson, of Claverack, Columbia Co., here presented his credentials as delegate from the Second District Branch.

The scientific papers were now taken up:

Dr. W. B. Eager read his paper on "An Inquiry as to Cause of Death following Confinement on the Sixth Day, with singular Nervous Symptoms." Discussed by Dr. William Govan and the author.

Dr. Robert Newman then followed with his "Demonstration of a New Instrument for Galvano-Cautery in Diseases of the Prostate, Bladder, and Urethra." Discussed by Dr. J. W. S. Gouley.

At his own request Dr. Gouley cut short his discussion, to be resumed at a later period of the meeting.

By permission of the meeting the order on the printed programme was altered, and upon motion of the President the meeting went into executive session.

The Secretary read the minutes of the last meeting, which were adopted.

It was next moved to adjourn, to meet at the Kaaterskill Hotel on the same evening. Adopted. Before adjournment the Secretary offered the following resolution:

Resolved, That this Branch express, through its Committee of Arrangements, its hearty thanks for the kindness and hospitality extended to it by the Young Men's Christian Association in providing this commodious and convenient room for the meeting.

Adopted unanimously.

The meeting then adjourned at 2:15 P. M.

The adjourned meeting was called to order by the President at the Kaaterskill Hotel, at 8:20 P. M.

As the executive business was the order before adjournment, it was resumed at this time, a quorum being present.

The Secretary then moved that, whereas by mistake at the last meeting in Yonkers the biographical notices were not properly referred, the notices then read be now referred to the Committee on Necrology.

Adopted.

According to instructions at the last meeting the Committee appointed to give shape to a few appropriate remarks upon the death of the late Austin Flint, M. D., sent the following circular to three of the prominent medical journals for publication:

The Fifth District Branch of the New York State Medical Association desires to record its unfeigned grief at the decease of its most distinguished Fellow and Founder.

In the death of Austin Flint, M. D., LL. D., a loss has befallen the medical profession which will be sadly recognised as almost irreparable, not only in America but throughout the civilised world. Few men of this generation have done so much to exalt the dignity of our chosen calling, and, both at home and abroad, all who knew him conjoined with reverence for his intellectual power and scholarly attainments a sense of personal attachment. Whether as an exponent of scientific medicine, or as an exemplar of professional integrity and private virtue, he stood conspicuous among the best of his contemporaries, and at the ending of a life without reproach, of a career lavish in benefactions to mankind and rich in well merited honors, no enmity will slur his memory, no jealousy dispute his leadership.

J. G. PORTEOUS, M. D., *President.*

E. H. SQUIBB, M. D., *Secretary.*

Dr. J. H. Hinton reported through Dr. Van Hoevenberg that the result of the collection of assessments for this meeting was $10.50.

The reading of papers was then resumed by Dr. H. Van Hoevenberg, with his "Short Paper of Medico-Historical Interest as regards the City of Kingston."

Dr. John Shrady spoke on the interest of the paper, and moved that Dr. Van Hoevenberg be requested to have the paper published. Carried unanimously.

Dr. J. G. Porteous then read his "Brief History of a Case of Intussusception, with Specimen." This case elicited considerable interest, and was discussed by Drs. Wood, Gouley, and Shrady.

It was moved, and carried unanimously, that Dr. Porteous be requested to have the case published.

Dr. J. W. S. Gouley next made some interesting remarks upon thirteen specimens of stone removed from the bladder, which he presented for inspection.

Discussed by Dr. Shrady and the author of the remarks.

The discussion on Dr. Newman's "Demonstration," which was suspended at the early part of the meeting in Rondout, was now resumed, and was continued by Drs. Gouley, Meier, and Newman.

On motion of Dr. P. B. Porter it was resolved that this Branch express its extreme gratification and extend a unanimous vote of thanks to Mr. George Harding and Mr. W. F. Paige for their kindness and generous hospitality to the Fellows on this visit to the hotel.

Adjourned at 10:50 P. M. to meet next in Brooklyn.

The register showed twenty-two Fellows, one delegate, and one Fellow from Greene County, by invitation, present.

E. H. SQUIBB, *Secretary.*

ANNUAL MEETING.

The second annual meeting of the Fifth District Branch was held in Brooklyn, at Everett Hall, No. 398 Fulton street, on Tuesday, Oct. 12, 1886. Called to order by the President, Dr. J. G. Porteous, at 11:20 A. M. The minutes of the last meeting were read and adopted. The report of the Committee of Arrangements was read and accepted. The President then delivered his address, which was ordered published in "Gaillard's Medical Journal." The report of delegates to the other Branches was called for, but the Secretary stated that none had been appointed for the year. The Secretary then read the following Annual Report of the Executive Committee, which was adopted:

The Executive Committee begs leave to report that there have been three meetings of the Committee during the year, and on two occasions votes were recorded by mail, the one to elect a Secretary for the year just past, and the other to appoint a Committee of Arrangements for the Yonkers special meeting, and to fill two vacancies in the Executive Committee. In regard to the funds of the Branch, it may be stated that there never have been any in the treasury. The amounts collected as assessments at each meeting of the Branch have never been sufficient to defray the necessary expenses. This committee, however, has always paid its debts promptly by advanced payments.

The by-laws call for the reading of the minutes of the committee for the year. They are as follows[1]:

E. H. SQUIBB, *Secretary.*

The Treasurer next read his annual report as follows, which was accepted:

The Treasurer has the honor to report that the expenses for the year have been $55.40, the receipts $41.50. The amount due the treasurer at the beginning of the year was $18.15, and the total amount now due from the Branch has increased to $32.05.

E. H. SQUIBB, *Treasurer.*

The President then called for the Reports of Special Committees.

The Secretary stated that none had been appointed, but the following might be brought up under this head: According to the resolution passed at the last special meeting, the Secretary sent a request to Dr. W. H. Flint to write a few appropriate remarks on the life of the late Dr. Gaspar Griswold. He very willingly complied, and, upon receipt, the Secretary referred them to the Committee on Necrology, as directed.

The Secretary next read a printed communication bearing date of July 14, 1886, from the President of the parent Association, again calling attention to the effort making to secure a building for our library and meetings.

The Secretary now regretted to have to announce officially to the Branch the death of Dr. Frank Hastings Hamilton, one of the founders of our Association.

Dr. J. C. Hutchinson next read a biographical notice of the late Dr. Frank H. Hamilton, which was referred to the Committee on Necrology.

The next business was the appointment of a Nominating Committee by the Fellows present. The President called for nominations from each county in succession, and the following were chosen for that committee:

For Dutchess County, J. G. Porteous; Kings, Avery Segur; New York, J. H. Hinton; Orange, H. A. Pooler; Putnam (none present); Queens (none present); Richmond, A. L. Carroll; Rockland, William Govan; Suffolk, E. H. Hamill; Sullivan (none present); Ulster (none present); Westchester, N. C. Husted.

The President announced that this closed the executive session, and the meeting would now proceed in open session.

Dr. Avery Segur next read his paper on "Some Recent Impressions of Medicine in England." There was no discussion, and the paper was ordered to be published as provided for.

The morning session was adjourned at 1:15 P. M.

[1] These minutes will be found on subsequent pages.

The afternoon session was called to order by the President at 2:20 P. M.

Dr. H. A. Pooler read his remarks on "The Milk-Supply of Large Cities, and the Improper Mode in which it is Conducted." The interest in the paper was increased by lantern illustrations by E. W. Martin, Ph. D., chemist to N. Y. Board of Health.

The paper was discussed by Drs. E. R. Squibb, William McCollom, A. L. Carroll, A. N. Bell, J. C. Hutchinson, N. W. Leighton, W. B. Eager, J. P. Garrish, and the author, and by Dr. Martin, by invitation, and Dr. H. F. Risch, a candidate for Fellowship, by permission.

Dr. P. B. Porter moved a vote of thanks to Drs. Pooler and Martin for their interesting demonstration, which was unanimously carried.

Dr. Hutchison offered a resolution requesting Dr. Pooler to continue his interesting investigations, and to favor us with his further results at some future time. Carried.

Next, Dr. A. L. Carroll read his remarks on "Lepto-Meningitis Infantum." There was no discussion, and the paper was ordered to be published.

Dr. A. N. Bell here asked the attention of the Fellows to the circular he had distributed in behalf of the "Rush Monument Committee." As a member of that committee he would be glad to receive contributions to the fund.

Dr. Govan made the verbal report of the Nominating Committee that the old Executive Committee had been reappointed. This being put to the Branch was unanimously adopted.

The President then declared the Nominating Committee discharged.

Before adjournment the President called for a meeting of the new Executive Committee, to take place immediately after adjournment, to elect a Secretary for the ensuing year.

Adjourned at 5 P. M. to meet at the next annual meeting in Brooklyn.

The register showed thirty-five Fellows present.

E. H. SQUIBB, *Secretary.*

A meeting of the Executive Committee was held in the common council chamber, Yonkers, on Tuesday, March 23, 1886. The meeting was called to order by the President, Dr. J. G. Porteous, at 1:10 P. M. Present: Drs. J. G. Porteous, W. B. Eager, Wm. Govan, N. C. Husted, F. U. Johnston, Wm. McCollom, P. B. Porter, H. Van Hoevenberg, W. D. Woodend, and E. H. Squibb.

The Secretary read the minutes of the last meeting, and also the result of votes by mail on the appointment of a Secretary for the ensuing year, the appointment of a Committee of Arrangements for the Yonkers meeting, and the appointment of new members of this Executive Committee to fill vacancies, all of which were approved and adopted.

The report of the Committee of Arrangements was received and approved.

The Secretary stated that as the death of our newly elected President, Dr. Desault Guernsey, occurred so soon after his election, the council filled the vacancy by the appointment of Dr. J. G. Porteous, of Dutchess County.

The President then appointed Drs. F. U. Johnston and Ellsworth Eliot to act with the Secretary as Registration Committee.

It was next unanimously resolved to hold the next special meeting in Kingston, on the third Tuesday in June, 1886, and upon recommendation of the Secretary the following Fellows were appointed as a Committee of Arrangements:

Dr. H. Van Hoevenberg of Kingston, Chairman; Drs. B. N. Baker of Rhinebeck, Jacob Chambers of Kingston, August Hühne and Frederick Hühne of Rondout.

The Secretary then reported that his expenses since the last meeting had been $27.15, and presented his cash book for inspection. The President appointed Dr. Porter to audit the account, which was reported correct.

It was then decided to make the assessment for this meeting fifty cents.

Dr. J. W. S. Gouley, who was present by invitation, presented the following circular for consideration:

A circular letter has been issued to the Fellows of the New York State Medical Association and to the members of the New York County Medical Association, informing them that a Building Association has been organised for the purpose of raising funds to purchase a plot of ground in the city of New York on which to erect a structure for the purposes of these Associations, and inviting their Fellows and members to become members of the Building Association by subscribing for some shares thereof.

The subject having thus been presented to the Fellows of the Association, it is earnestly hoped that the impulse conveyed to their minds has already so fully roused their spirit of progress, enterprise, and professional pride, that they will not disregard this call, but respond promptly, and as liberally as their means will allow.

It was then moved and adopted that the circular should be so worded and expanded by the President and Secretary as to make it have the force of an appeal from this Branch, be presented to the general meeting for approval, and then be printed and circulated among the Fellows of the Branch.

There being no further business, the Committee adjourned.

E. H. Squibb, *Secretary.*

A meeting of the Executive Committee was held in the Young Men's Christian Association rooms, Rondout, on Tuesday, June 15, 1886, at

11:40 A. M. Present: Drs. J. G. Porteous, W. B. Eager, William Govan, P. B. Porter, H. Van Hoevenberg, E. H. Squibb.

The Secretary read the minutes of the last meeting, which were adopted.

The Committee of Arrangements made no formal report.

The President then appointed Drs. W. B. Eager and J. H. Hinton to act with the Secretary as Registration Committee.

The Secretary reported that there was due him at the present time $25.65, and he presented his cash-book for examination. The President appointed Dr. Porter to audit the accounts, and he reported them correct.

It was then announced that, according to Sec. 4, Article III, of the Constitution, the next annual meeting would be held in Brooklyn, on Tuesday, Oct. 12, 1886.

The Secretary recommended that the following Fellows be appointed as the Committee of Arrangements: Dr. J. C. Hutchinson, Chairman; Drs. T. M. Lloyd, J. D. Rushmore, Avery Segur, R. M. Wyckoff.

Adopted unanimously.

After a short discussion, it was decided to make the assessment for this meeting fifty cents.

The Secretary then announced that, according to instructions, he had sent off the circulars of appeal for the Building Association to one hundred and ninety-seven active Fellows and to the four Branch Secretaries.

He also announced that he had received the programme for the annual meeting of the Third District Branch, to be held in Binghamton on June 17th. There were nineteen papers to be read.

There being no further business, the meeting adjourned.

E. H. SQUIBB, *Secretary.*

A meeting of the Executive Committee was held in Everett hall, Brooklyn, on Tuesday, Oct. 12, 1886, at 10:20 A. M. Present: Drs. J. G. Porteous, William McCollom, P. B. Porter, F. U. Johnston, William Govan, W. D. Woodend, N. C. Husted, E. H. Squibb.

The Secretary read the minutes of the last meeting, which were adopted.

The report of the Committee of Arrangements was then read as follows:

The undersigned, as your Committee of Arrangements, respectfully submit the following report:

After making careful inquiry concerning available rooms in the Mansion House, Pierrepont House, Clinton House, St. George's Hotel, the L. I. Historical Rooms, and Everett Hall, it was finally decided to accept the use of the latter on the following terms: The large meeting-room, with all its accommodations, to be used from about 10 A. M. until about 5 P. M., for the sum of $5.00; then a substantial lunch to be served, at about 1 P. M., in the building, at the fixed rate of fifty cents, to be paid by each Fellow partaking,—no guaranty as to the number being required.

In consideration of these very moderate terms, this committee would especially request that the Fellows present patronise the caterer in the building rather than go outside to be served.

Respectfully submitted,

J. C. HUTCHINSON, *Chairman.*
J. D. RUSHMORE.
T. M. LLOYD.
AVERY SEGUR.
R. M. WYCKOFF.
J. G. PORTEOUS, } *Ex officio.*
E. H. SQUIBB, }

Approved.

The President appointed Drs. William Govan and S. H. Benton to act with the Secretary as Registration Committee.

The Treasurer reported that there was now due him $32.05, and presented his cash-book for examination. The President appointed Dr. Govan to audit his accounts.

The Secretary read the following resignations: Drs. H. C. Coe, E. C. Dent, Howell Tyler, and E. E. Whitehorne, all of New York city. As these names came through the Secretary of the parent Association, no action was called for from the Branch.

The following appeal, sent out by the Secretary to each member of the Executive Committee to solicit papers, was read:

September 1, 1886.

According to Art. III, Sec. 6, of our By-Laws, the Executive Committee is expected to assist in providing papers for the Branch meetings. The Secretary has made appeals for the next meeting to the following Fellows:

Drs. E. Barnes, Pleasant Plains, Dutchess County; H. A. Pooler, Goshen, Orange County; G. C. H. Meier, New York city; E. Denison, New York city; Avery Segur, Brooklyn: G. W. Baker, Brooklyn; H. B. Ransom, Brooklyn; W. H. Thayer, Brooklyn; Jos. Creamer, Brooklyn.

Up to this time replies have been received from only two of the above—Drs. Pooler and Segur—both of whom will favor us with interesting papers. As it is now fully two months since the appeals were sent out, the Secretary would seek the aid of the members of the Executive Committee to procure two or three more papers for the next annual meeting, to be held in Brooklyn, Oct. 12, 1886.

E. H. SQUIBB, *Secretary.*

The Secretary next reminded the Executive Committee that the new by-laws go into effect at this meeting.

The subject of the publication of the papers presented to the Branch was then brought up. After some discussion and consultation with the editor of "Gaillard's Medical Journal," it was unanimously resolved that all the matter ordered to be published by the Branch appear in "Gaillard's Medical Journal" until otherwise disposed of by this committee.

After discussion, it was decided not to hold a special meeting until

after our next annual meeting, which is fixed by our altered Constitution for the fourth Tuesday in May, 1887, in Brooklyn.

The same Committee of Arrangements was chosen as acted at the late meeting.

Dr. Govan here reported the Treasurer's accounts correct; that the expenses since the organisation of the Branch had been $120.05, and the receipts $88.00, leaving a balance due him of $32.05.

The manner of future assessments and the amount to be fixed upon were next brought up. After some discussion, the following resolutions were passed unanimously:

Resolved, That as soon as the State Association at its next meeting ratifies the alterations in the Constitution, the Secretary is authorised to send out appropriate bills, in somewhat the form shown, to all Fellows of the District now on the official list of the parent Association; and to those who choose to settle at this meeting, the bills shall be sent receipted. Also,

Resolved, That the uniform assessment for all shall be $1.00,—the amount thus collected to be the treasury fund.

There being no further business, the committee adjourned at 11 A. M.

E. H. SQUIBB, *Secretary.*

A meeting of the newly elected Executive Committee was held at Everett Hall, Brooklyn, immediately after the annual meeting, Oct. 12, 1886. Present: Drs. J. G. Porteous, William Govan, F. U. Johnston, P. B. Porter, E. H. Squibb.

The object of the meeting was the election of a secretary for the ensuing year. Upon nomination, E. H. Squibb was reëlected.

The meeting then adjourned at 5:15. P. M.

J. G. PORTEOUS, *President.*

E. H. SQUIBB, *Secretary.*

NEW YORK COUNTY MEDICAL ASSOCIATION.

ANNUAL REPORT.

Dr. Charles A. Leale, the President of the Association, reported that the nine stated meetings required by the by-laws had been regularly held, eight of which were devoted exclusively to the promotion of the science and practice of medicine, and one was set apart as a Memorial Meeting in honor of the late Professor Austin Flint, M. D., LL. D., one of the Founders of the New York County and of the New York State Medical Associations, the President chosen for the next International Medical Congress, and without doubt the most highly esteemed, eminent, and generally beloved physician in America. The death of Dr. Austin Flint was in a short time followed by that of Professor Frank Hastings Hamilton, M. D., LL. D., also one of the Founders of the County and State Associations, a life-long friend of Dr. Flint, and for over fifty years one of the most instructive and brilliant teachers of surgery.

The transactions for the past year have been as follows:

Dr. R. J. MacGregor read a paper on "Insanity and Public Opinion," showing the difficulty the physician often has in doing his duty. He gave his opinions in regard to the best methods of treatment and protection of the insane.

Dr. Ira B. Read read a paper on "Double Popliteal Aneurism," with the history of a case, in which the aneurism in one leg developed after the other had been successfully treated; the ligation of the femoral was necessary, after futile attempts by other means; a cure followed, when an aneurismal tumor appeared in the opposite limb, which was treated by the same method with a similar favorable result.

Dr. J. W. S. Gouley presented a number of specimens of papilloma of the bladder, where the accuracy of his diagnoses had been confirmed by the microscopical examinations, and gave the histories of six cases; also the differential diagnoses, modes of treatment, and safest methods to operate. Discussed by Dr. Joseph D. Bryant, Dr. Oberndorfer, Dr. Hearney, and others. In conclusion, Dr. Gouley believed that a series of symptoms could undoubtedly be formulated which would be of sufficient diagnostic value. If there is a stone present, there may or may not be hæmorrhage. It is, however, very infrequent in young subjects; and therefore when hæmorrhage from the bladder occurs in a patient under forty, without any assignable cause, we may suspect papilloma. The hæmorrhage, when papilloma is present, is irregular in appearance, and stops spontaneously.

As the disease progresses the attacks increase in frequency and severity, and later there is cystitis, while the frequent contraction of the bladder in its efforts to expel this sponge-like growth gives rise to concentric hypertrophy of its walls. A crucial test of this condition he had demonstrated by passing an instrument through the urethra, and with it removing a small piece of the growth. In this way he had made a positive diagnosis in four cases. In the discussion, Dr. Leale mentioned an instance where Dr. Gouley made a diagnosis of papilloma of the bladder, and performed median cystotomy for its removal.

Dr. T. R. Varick read a paper on, and presented, a vesical calculus of unusual size, which he had removed from a boy aged fourteen years by the bi-lateral operation, and gave the recent opinions in regard to the different methods of operating. Discussed by Dr. Gouley and others.

Dr. Lawrence J. McNamara read a paper entitled "A Study of the Ætiology of Tumors," with an examination of some of the existing theories on the subject, reviewing the perplexing though fascinating subject of the existence in the body of an independent growth, distinct in its histological elements from the surrounding matter, drawing nutrition from the general system, and liable at certain periods of development to infect the organism; also a study of advances in histological work, which have enabled us to make partial classification of these new growths, according as they are found in some type of existing normal tissue. Discussed by Dr. J. W. S. Gouley, Dr. C. A. Leale, and Dr. D. Brown.

Dr. Frank Graves presented interesting pathological specimens for Dr. E. G. Janeway,—(1) Epithelioma of the Æsophagus, in which there resulted a stricture four inches in length. Both recurrent nerves were involved, and during life there was paralysis of both vocal cords. (2) Primary Tuberculosis of the Kidney. The inflammatory process had extended to the bladder, where tuberculous cystitis was found. The right ureter was obstructed, and there was pyonephritis. Remarks on the specimens by Dr. J. W. S. Gouley and Dr. F. Graves.

Dr. Frederic S. Dennis read a paper on "Laparotomy in the Treatment of Penetrating Wounds and Visceral Injuries of the Abdomen," and presented at the meeting of the Association several patients on whom the operation had been performed and recovery followed. He also gave a very interesting and extended *résumé* of the works of other surgeons, and concluded as follows: "It is a source of national pride that laparotomy in penetrating wounds and visceral injuries of the abdomen was conceived, developed, and perfected in America." Discussed by Dr. Joseph D. Bryant, Dr. E. G. Janeway, Dr. J. W. S. Gouley, Dr. H. M. Biggs, and Dr. C. A. Leale.

Dr. Lewis Hall Sayre read a paper entitled "A Contribution to the Ætiology of Pott's Disease," in which he sided with those who look upon traumatism as the exciting and necessary cause, which, in a constitution

already vitiated, must be much less severe to produce spinal or other lesions than in a person of vigorous and robust health. He related a case in which it was necessary to make the diagnosis;—the child must be placed across the lap, and strong pressure made upon each rib, so as to bring it into firm contact with its articulating vertebra; and when the rib is reached which articulates with the inflamed or diseased vertebra, either pain or a muscular spasm will be produced, very similar to that caused by "point" pressure on a contracted tissue. Discussed by Dr. Lewis A. Sayre.

Dr. J. W. S. Gouley exhibited a peach-pit, which he said was of great interest as constituting a contribution to the subject of Foreign Bodies in the Alimentary Canal. It was removed by a gentleman from his rectum three months after it had been swallowed.

Dr. Gouley related the history of the case operated on by Dr. Samuel White, of Hudson, New York, in 1807. A patient swallowed a teaspoon, and one month afterward Dr. White performed laparotomy, extracted the spoon, sewed up the intestine and the external abdominal wound. A good recovery followed.

Dr. John H. Hinton had known a man to swallow a peach-pit and pass it on the following day.

Dr. Louis A. Sayre related the particulars of two cases, and the usefulness of the bristle or umbrella probang to extract foreign bodies from the œsophagus.

Dr. P. Brynberg Porter referred to the cases reported by Dr. C. B. Hutchins, of California, where special forms of diet were supposed to have been the means of safely expediting exit.

Dr. C. A. Leale thought it was of great importance to know how far the junction of the small and large intestines could safely be distended, and had made many observations to settle this point. He stated that any smooth substance, with no greater diameter than a copper two-cent piece, may be expected to pass through the intestines and rectum of a child, but that it would probably lodge just above the internal sphincter muscle, from which place easy removal is safely accomplished.

Dr. Hermann M. Biggs read a paper on the "Ætiology of Rabies, and the Method of M. Pasteur for its Prevention," giving the results of his observations during the past winter in Paris, and a review of the different methods employed by M. Pasteur in his studies of rabies, the methods for rendering dogs refractory to the disease, and the results on the human beings inoculated. As doubt existed in the minds of some critics, Dr. Biggs concluded his remarks in these words:

But throwing aside the evidence which we have now at hand as to the efficacy of Pasteur's method,—and I think it must be said that it is not altogether satisfactory in character,—let us consider the probability of the correctness of these last observations from the light thrown upon the

subject by his former work. Does it seem probable that the man who, in the earliest infancy of bacteriology, disclosed the nature and cause of fermentation, and established our knowledge of it on a firm foundation in the face of much opposition and scepticism; the man who disproved the theory of spontaneous generation, and laid the foundations upon which rests our whole system of antiseptic surgery; who disclosed the nature of the plague in silk-worms in France, and devised the methods for its prevention; who discovered the principles underlying the method of protective vaccination in the diseases of animals, and has prepared the only practicable vaccines,—does it seem probable that such a man has given nearly six years of continuous study to the consideration of rabies without achieving some substantial results? Or does it seem probable that he has been dealing all these years with some form of septicæmia, as has been suggested, laboring under the delusion in the meanwhile that it was rabies? This I cannot believe; and if it is not true, then Pasteur's conclusions must be in the main correct, for certainly no one will question his honesty. Every great discovery in science has been met with scepticism, opposition, and ridicule.

The discussion of Dr. Biggs's paper was opened by Dr. Austin Flint, Jr., who said that it was proper to put the facts alleged by Pasteur to the same tests as any new discoveries in physiology are required to be subjected to. If investigators, even as illustrious as Pasteur, such as Magendie and Claud Bernard, for instance, had attempted to introduce any new points into physiological science, which are not better supported by corroborative evidence than Pasteur's alleged discoveries, their statements would not have been accepted.

Dr. E. G. Janeway said that he had visited Paris last summer, and was cordially offered the opportunity of inspecting Pasteur's laboratory and his method of inoculation, but not of the preparation of the virus used for the purpose. He stated that the period of incubation in hydrophobia is indefinite, but usually less than three months, and rarely or never more than a year.

Dr. William T. Lusk made extended remarks on "Extra Uterine Fœtation, with Illustrative Case," and said that the presence of the fœtal tumor in the abdomen is always a source of constant pain and distress. As a matter of humanity, therefore, the child ought to be removed very shortly after its death, and the physician should not wait for symptoms which indicate that the constitution is already undermined before advising laparotomy. The cases which Dr. Lusk has investigated show that nearly all the patients recover when the operation is undertaken early.

Dr. Reginald Hall Sayre and Dr. E. Sanders related the histories of cases of extra-uterine fœtation.

Dr. E. G. Janeway read a paper on "The Diagnosis of Certain of the Infectious Diseases," and gave one of the most lucid lectures upon this

frequently annoying subject. He was chosen as the one most competent to perform this task, in consideration of his many years' experience in the fever hospitals, his long service as curator to Bellevue Hospital, and his efficient service while Health Commissioner of New York city. The general profession of New York had been much agitated in consequence of an expensive litigation, where the law was invoked to inflict a penalty upon a physician who had reported a case of suspected small-pox to the Board of Health. Dr. Janeway stated,—"If lawyers or judges give or pronounce opinions in cases which work to the detriment or against the subsequently proved rights of individuals, do we find that processes can be commenced against them for the effects of erroneous constructions of law? Dr. Janeway then mentioned that in not a few text-books some important facts bearing upon the methods of development of certain forms of the infectious diseases, if variable, are omitted; and gave as examples purpura variolosa, variola vera, varioloid, and variola varicelloides.

Dr. Frederic S. Dennis read a paper entitled "Observations on over Five Hundred Cases of Compound Fractures taken indiscriminately from Hospital Practice, and showing a remarkably low Rate of Mortality." These cases included fractures of the cranium and of all the long bones of the body, and many of them were complicated with other severe injuries.

Dr. T. Gaillard Thomas read a paper on "Laparotomy as a Diagnostic Resource," giving the results of his long experience, citing cases where death might have been averted if it had been resorted to; also giving a large number of illustrations where, by its performance, the only chance to save life was given, with histories of typical cases where recovery followed. Dr. Thomas believes that after all other means fail, and a doubt remains in regard to the diagnosis, a thorough, properly conducted antiseptic exploration may easily prove at times that a cure may follow the removal of a neoplasm, or other cause of trouble.

Remarks on Dr. Thomas's paper were made by Dr. Joseph D. Bryant and Dr. E. G. Janeway.

Dr. Ira B. Read presented pathological specimens, which completed the history of the case previously reported of a cure of double popliteal aneurism. Sudden death was caused by the rupture of an aneurismal sac, which was shown, together with the remains of the popliteal arteries.

Dr. E. G. Janeway presented a specimen of perforation of the intestines where death followed, illustrating the importance of the subject of Dr. Thomas's essay. Dr. Janeway stated that there was one case on record of recovery following a perforation of the intestines in typhoid fever, where laparotomy was performed, and the opening of the intestines closed by sutures.

OFFICERS AND EXECUTIVE COMMITTEE OF THE NEW YORK COUNTY MEDICAL ASSOCIATION FOR 1886.

President—Charles A. Leale, M. D.
Vice-President—John Shrady, M. D.
Recording Secretary—P. Brynberg Porter, M. D.
Corresponding and Statistical Secretary—Glover C. Arnold, M. D.
Treasurer—Edmund S. F. Arnold, M. D.

MEMBERS OF THE EXECUTIVE COMMITTEE.

Charles S. Wood, M. D.,—term expires in January, 1887.
John W. S. Gouley, M. D.,—term expires in January, 1888.
William T. White, M. D.,—term expires in January, 1889.
John H. Hinton, M. D.,—term expires in January, 1890.

Just one year ago, at the November meeting of the New York County Medical Association, I endeavored to secure the services of our most prominent member, Dr. Austin Flint, Sr., as the essayist for the evening, so as to give the members of the New York State Medical Association then present the opportunity to hear as much as possible from one whose storehouse of knowledge was overflowing. Dr. Flint then gave us one of his most brilliant discourses, entitled "Elements of Prognosis in Bright's Disease." Many at that time listened to the erudite scholar's expositions for the last time, as he soon after laid aside forever his pen. His loving voice will now no more be heard, and his beneficent face has departed, but never can be forgotten.

A memorial meeting was held at the regular stated meeting following, and it was of such an unprecedented character, and exhibited such universal grief and admiration, that a full report was published, a copy of which is herewith transmitted:

OFFICIAL REPORT OF THE MEMORIAL MEETING OF THE NEW YORK COUNTY MEDICAL ASSOCIATION, IN HONOR OF THE LATE AUSTIN FLINT, M. D., LL. D., HELD AT THE CARNEGIE LABORATORY, BELLEVUE HOSPITAL MEDICAL COLLEGE, N. Y., APRIL 19, 1886.

ORATION BY THE PRESIDENT, CHARLES A. LEALE, M. D.

Gentlemen:

Professor Austin Flint, M. D., LL. D., since the last monthly meeting of the New York County Medical Association, has departed from our midst, and we are assembled together this evening to honor his memory in this hall of medical science, where he delivered his last lecture.

Our grief at the loss of a cheerful, noble companion cannot be expressed in words, or our sorrow relieved by tears, when we behold his

vacant chair. Ever since our organisation, Dr. Austin Flint has been our beloved and cherished friend and co-worker; always ready with his mind, voice, pen, and presence to contribute to our welfare. We have been instructed by his wisdom, and made happy by his pleasing manners.

At the social gathering following our last annual meeting, as he was not able to be with us in person, he thoughtfully sent his "loving bowl," with an abundance of delicious nectar, accompanied by the most kind expressions and good wishes. The room was filled with our members, and after a few remarks on the significance of the time-honored bond of social union, and thanks to the giver, by your President, many expressions of good-will and continued prosperity to our dear friend came from those who, for years, had learned from his teachings the manner best adapted to promote the welfare of the afflicted looking to them for comfort. Now he has gone, but he can never be forgotten.

His indelible writings, found in the principal libraries of the world, from their truthful records of clinical facts, will always be prominent in medical literature. From his prize essay to the American Medical Association, written many years ago, to the last edition of his great work on the practice of medicine, just completed at his death, he exhibited the traits of the diligent searcher for truth and recorder of facts, with the aim to impart all he knew for general instruction.

Personally, as well as professionally, I have intimately known Dr. Austin Flint for more than twenty-two years. In 1863 he was a most brilliant clinical teacher of the science and practice of medicine, and gave special instructions in the art of physical diagnosis. His acute ear and accurate knowledge of physical signs, and of pathology, made him one of the most instructive masters in medicine. His clinics were crowded with attentive listeners; and it was during these hours that he appeared to be in his happiest mood. His kind words and explanations to those in doubt, cautious admonitions to the over-buoyant, and great faith in the tenacity of life to maintain existence, are remembered by his pupils as towers of strength.

During many hundreds of consultations with Dr. Austin Flint at the bedside of the sick and injured, covering a continuous period of over a fifth of a century of the practice of medicine in New York city, he has always been the same courtly, dignified, and pleasant adviser, the diligent searcher for the correct diagnosis, the judicious therapeutist, and the hopeful prognostician. His visits were brief. He maintained proper confidence in the physician, and imparted trust to the relatives and friends. At the homes of the sick he was a cheerful, welcome visitor and physician, and painstaking and correct diagnostician.

Socially, Dr. Austin Flint was a most pleasing companion. On the return voyage across the Atlantic, from the London International Medical Congress in 1881, we were daily together. During the hours of safety he

was overflowing with mirthfulness and pleasing conversation. When apparent danger threatened, he was confident and brave, exhibiting the same hopeful disposition that those at home have noticed when he graced the friendly association of professional men, and so often became the centre of joyous conversation. His extensive knowledge of the classical literature of the English language and his acute memory of related incidents, with a remarkable aptness in quotation, enabled him to enliven the company.

In his home, Dr. Austin Flint was the considerate, indulgent, and kind husband and father. Mrs. Flint contributed much, by her talents and affection, to assist and cheer him. In his journeys to Europe she was with him, to comfort and console;—and let us, in passing, drop a tear of sympathy for the faithful wife and companion of over fifty years, now left sorrowing. She it was who remained loyal to him in early life, when duty frequently called him to change his residence—while teaching in the medical colleges—from Buffalo in the North, to New Orleans in the South. She it was who always encouraged him; and, after many years, when they moved to their beautiful residence on Fifth Avenue, which she took such delight in adorning and calling "home," her happiness was overflowing. They were truly united, and illustrated the beautiful American poem,—

"As unto the bow the cord is,
So unto the man is woman;
Though she bends him, she obeys him,
Though she draws him, yet she follows,
Useless each, without the other!"

Dr. Austin Flint was of a lofty stature; had a powerful and symmetrical body; a large brain; brilliant, clear, dark hazel eyes; regular features; a very cheerful expression; was quick in motion; had well preserved and harmoniously working organs. He was a systematic, diligent student, a steady professional worker, fond of proper recreation, punctual in his engagements, self-sacrificing, a wise counsellor to the rich, and a true friend to the worthy poor.

Dr. Austin Flint was an original thinker, as well as a reflective expounder. He was not intolerant of the opinions of others, but recognised the fact that more than one therapeutical course would lead to the same end and recovery, and did not urge a change of remedies when he saw those already employed doing good service.

Twenty years ago Dr. Austin Flint did much by his teachings and practice to demonstrate that most acute diseases were self-limited, ran a definite course, were not aborted by medication, and tended towards recovery, if the rules for hygiene, proper nutrition, and guidance were judiciously followed. Dr. Austin Flint was one of the first to utilise these facts, and to show the uselessness of popular but false doctrines, when interfering with the efforts of nature.

Dr. Austin Flint quite recently read an excellent paper before our Association, filled with useful observations and suggestions. On the evening preceding his death he attended to his usual duties, and returned home from a pleasant meeting of the Faculty at eleven o'clock. He was met at the entrance of his residence by his faithful servant, and immediately retired to his sleeping-room; by midnight he was unconscious, and was soon surrounded by relatives, physicians, and friends. He remained unconscious until the following day,—two o'clock P. M., Saturday, March 13, 1886,—when, from the attack of cerebral appoplexy, life ended, and the mortal took on immortality. His frequently expressed wish to his friends had been granted, and while in the full glory of physical and mental vigor, before senility had in the slightest degree appeared, he was taken from our ranks, leaving many mourners for the noble, pure man, the benevolent physician, the faithful husband, the kind parent, and the cherished friend.

Immediately after receiving a notice of the death of Dr. Austin Flint, your President called a special meeting of the Executive Committee, to take action in regard to doing our utmost to honor the memory of the one whom we so much loved in life; and within a few hours a printed appeal was sent to each member, inviting his presence at the funeral.

The Association had a large broken column, six feet high, of delicate, fragrant, and beautiful flowers, sent to his residence, and from thence taken to the church.

The attendance of the representative members of the medical profession at Christ Episcopal Church, during the burial service, surpassed that of any similar event for many years. As Dr. Austin Flint had remained his entire life true to his profession, so, in death, his numerous friends remained loyal to him.

Dr. Austin Flint was eminently an American physician. Two hundred and forty-eight years ago his ancestor, Thomas Flint, came from Derbyshire, England, and settled in Concord, Mass., in 1638. His great-grandfather, Edward Flint, physician, resided at Shrewsbury, Mass., and his grandfather, Austin Flint, also a physician, died at Leicester, Mass., in 1850, after having lived more than ninety years. In the Revolutionary war he served as a surgeon. The father of Dr. Austin Flint was a distinguished surgeon at Northampton, and afterward at Springfield, Mass.

Dr. Austin Flint was born in Petersham, Mass., October 20, 1812. He attained the highest pinnacle of fame in America, and his son, who inherits his name, has long occupied a prominent position. We thus have presented to us an unbroken line of five generations of American physicians—a fact probably unprecedented on this continent.

Dr. Austin Flint, after three years of collegiate studies at Amherst and Cambridge, entered the medical department of Harvard college, and from that college received the degree of M. D. in 1833.

On becoming a physician, he practised his profession in Boston and Northampton, where he soon became a leader of progressive medicine, and prepared himself for the future successful teacher. In 1836 he moved to Buffalo, New York, and, by his publications, soon became known to the general profession. In 1844 Dr. Austin Flint was elected professor of the institutes and practice of medicine in the Rush Medical College, at Chicago, which position he held for one year without discontinuing his residence at Buffalo. He started the "Buffalo Medical Journal" in 1846, and remained its editor for ten years.

In 1847 Dr. Austin Flint, with Dr. Frank H. Hamilton and Dr. James Platt White, founded the Buffalo Medical College, and for six years remained an original member of the Faculty, and the professor of the principles and practice of medicine and of clinical medicine.

In 1852 he accepted the professorship of theory and practice of medicine at the University of Louisville, ably filling the chair until 1856, when he returned to Buffalo as professor of pathology and clinical medicine.

Dr. Austin Flint became the professor of clinical medicine in the School of Medicine, and visiting physician to the Charity Hospital, of New Orleans, in 1858, remaining there during the three successive winters.

In 1859 he established himself in New York city, and in 1861 became professor of pathology and practical medicine at the Long Island College Hospital, which position he resigned in 1868. In 1861 he was appointed one of the physicians to the Bellevue Hospital, and professor of the principles and practice of medicine in the Bellevue Hospital Medical College, and for twenty-five years, up to the time of his death, looked upon its great success with special pride.

In 1868 Dr. Austin Flint was chosen orator of the New York Academy of Medicine; was its Vice-President in 1872, and President in 1873. In 1884 Dr. Austin Flint was one of the original founders of the New York County Medical Association, and also, in the same year, of the New York State Medical Association, since which time he has always taken a lively interest in their meetings, and contributed much to the literature of their transactions.

Dr. Austin Flint was elected President of the American Medical Association in 1883, and his inaugural address received the highest praise. Quite recently he had been appointed to deliver the address in medicine at the next meeting of the British Medical Association, and had prepared his paper for that occasion.

In 1881 he was made an honorary Vice-President of the International Medical Congress, at London, and recently was chosen President of the next International Medical Congress, to be held at Washington, D. C., in 1887.

Dr. Austin Flint has truly left to the American profession "*Clarum et venerabile nomen.*"

RESOLUTIONS OFFERED BY JOHN SHRADY, M. D., VICE-PRESIDENT, the Chairman of a Special Committee of the Executive Committee of the Association, appointed for the purpose of preparing the same:

WHEREAS, It has pleased God, in the exercise of His Divine Will, to remove from the sphere of his usefulness our esteemed co-worker, Austin Flint, M. D., LL. D., revered abroad, but best loved at home;—and

WHEREAS, It is but proper that we take to ourselves that consolation which comes from the rehearsal of his many virtues;—therefore, be it

Resolved, That as an Association to whom he gave his latest work, and ever his cherished counsel, we add our own to the many other testimonies of his worth.

Resolved, That we recognise in him an author of marvellous industry, who has made his impress on the medical thought of the age, modest and just, but still a master of deliberate statement, conscientious in the recognition of the labors of others, and despising not the humblest contributor to that science to which he devoted his life; a practitioner of his art without device, zealous for the dignity of his calling, suave, considerate, and gentle; one who worthily gained the gratitude of his patients, and will ever live in their most blessed memories; a consultant who dispensed rich stores of knowledge, ever judging kindly, more careful of the rights of others than of his own, cheery and abounding in charity for his brethren; a teacher hand-in-hand with his pupils, analytical, painstaking, less eager for glory than for exactness, ever approachable, and always ready with a reason for the faith that was in him; and a man in all the walks of life blameless, "who hath borne his faculties so meek," and "hath been so clear in his great office," and who, laboring to the last, hath fallen in sight of the promised land of his cherished hopes. And be it also

Resolved, That we tender to those of his own household and kinship our heartfelt sympathies, knowing well that to his son his life was a pæan of touching affection, and to his widow one long benediction.

JOHN SHRADY, M. D.,
E. S. F. ARNOLD, M. D.,
J. W. S. GOULEY, M. D.,
Committee.

ADDRESS BY LEWIS A. SAYRE, M. D.,

EX-PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

Mr. President and Members of the Association:

The summons which brings us here to-night is one of mingled sadness and pleasure. There must be sadness and grief at the sudden loss of one of our most distinguished members, who was America's greatest physician; and yet the sadness caused by this irreparable loss is tinged with deepest pride and consolation in the recollection of the fact that our profession has produced so great a man, whose stainless life has left an example which must exercise a salutary influence on all the younger members of that profession.

There were many points in the character of Dr. Flint well worthy the imitation of us all. His strict integrity, and his unswerving fidelity and faithfulness in the discharge of his professional duties were the most marked characteristics in his life. He was always most punctilious in

keeping, to the very moment, all his appointments with brother practitioners, so as not to rob them of any of their valuable time; and no man in the consulting-room was ever more faithful or conscientious in the discharge of all his professional duties to the patient, and at the same time more cautious and considerate in never giving offence, or wounding the feelings of his professional brother who had called in his services. There was such dignity in his manner, and such earnest and positive sincerity in his conversation, as at once to inspire confidence and command respect.

He was always a most indefatigable worker, ever engaged in the discharge of his professional duties,—either ministering at the bedside of the sick, lecturing to students, or devoting himself to his scientific studies. He never wasted a moment of his time. When not visiting his patients at the hospital, or engaged in professional consultation, he was in his library, pursuing his studies, in order to keep abreast with all the improvements in medical science, or else employed in recording the careful observations of his vast experience for the benefit of the profession at large. Hence his numerous writings, which have been translated into many foreign languages, have become the standard text-books of the civilised world.

There was one very remarkable trait in the character of Dr. Flint which is well worth the imitation of every one. Whatever he had to do, he did at once, never putting off until to-morrow what could be done to-day. Whenever appointed to prepare a paper, or assigned to make an address at some distant period, he immediately commenced the work, as soon as the duty had been intrusted to him. Consequently he always had it perfectly completed long before the time it was to be presented, and nothing, therefore, ever came from his pen in a hurried and unfinished manner. I have been informed that among his papers has been found, since his death, the address he had been appointed to deliver before the British Medical Association at its next annual meeting at Brighton, in August next. This paper was perfect and complete, and ready for the press, although it was not expected to be used for some months to come. The completion of this paper so many months before it was expected to be used is an excellent illustration of the character and habits of the man. I sincerely hope that the British Association may become cognisant of the fact, and request the same for publication in its Transactions, so that the profession at large may be in possession of his latest writings.

Brothers, while we bow in humble reverence and submission to the Divine Power, which has so suddenly bereft us of our beloved companion, let us rejoice in the noble example he has left for our imitation.

ADDRESS OF WILLIAM H. WELCH, M. D., BALTIMORE, MD.,

PROFESSOR IN PATHOLOGY IN JOHNS HOPKINS UNIVERSITY.

Mr. President and Gentlemen:

We cannot pay a more fitting tribute to the memory of Dr. Flint than to call to mind on this occasion his nobility of character and his achievements, familiar as these are to all here assembled.

When any one has attained the distinction which Dr. Flint had gained, we are led to seek for the sources of his strength. These, however, were so various that some would doubtless emphasize in this inquiry certain elements of strength, while others would find in different characteristics the basis of his success. While one would point to his admirable personal traits, another would direct attention to his excellence as a practitioner and consultant; while some would dwell upon his success as a teacher of medicine, others would call to mind his ability as a writer; and many would remind us of his valuable contributions to medical knowledge.

It is this many-sidedness, this completeness of character and of achievement, that form the distinguishing feature of Dr. Flint's life and work.

We who knew personally Dr. Flint love to call to mind his nobility of character. We shall remember him as a man who combined with dignity, affability, and gentleness of manner; with urbanity, firmness, and the courage of his convictions; with liberality,—a strict sense of personal and professional duty. That he had the qualities of a leader of men, his career demonstrated. To a well trained mind and a sound body were added indomitable energy and an unusual capacity for work.

That Dr. Flint should have attained the highest eminence as a practitioner and consultant does not occasion surprise, when we consider that he added to this happy combination of personal qualities a wide knowledge of medicine and a broad experience. This knowledge was of that most serviceable kind which came from a familiarity with medical literature, added to attentive observation at the bedside.

Dr. Flint had, by nature and by acquirement, the best qualities of a good physician. His medical judgments were deliberate and well considered. Sympathetic and cheerful in disposition, he won the confidence and attachment of his patients; skilful in the detection of disease and judicious in its treatment, he gained the respect and admiration of his brother practitioners. Far from being a nihilist in therapeutics, he laid especial emphasis upon the value of hygienic treatment, and was alive to the sources of error in therapeutics. I do not know a more graphic description and just appreciation of these errors than are to be found in the introduction to his work on clinical medicine, where he classifies and discusses them as "errors of ignorance," "errors of *a priori* reasoning,"

"errors of fallacious experience," "errors of authority," "errors of credulity," and "errors of skepticism."

As a consultant, the opinion of no one carried more weight; and, withal, he was always most considerate in his relations to the attending physicians.

We all know what great importance he attached to all matters relating to the professional conduct of physicians. His earliest printed address, one delivered in 1844, relates to this subject. All that he strove for in this direction was in conformity with his sincere convictions of what was right, and was most conducive to the advancement and welfare of the medical profession in this country.

As an attending physician in hospitals, Dr. Flint utilised his large opportunities to the fullest extent for all the legitimate purposes of clinical study and experience, while he was at the same time embued with a lofty sense of his obligations to the class of patients which there came under his charge. He remembered in practice what he so well expressed, when he said,—"These patients [that is, those in charitable institutions] have claims of poverty added to those arising from their diseases. Brutality is less reprehensible when manifested toward those whose influence is valuable, from whom fees are expected, and who can terminate at any moment professional relations with their medical advisers."

As a man and as a physician, Dr. Flint would have obtained preëminence in any community. His influence, however, extended far beyond the limits of any community, and, indeed, far beyond the limits of this country.

It was as a medical teacher and as an author that Dr. Flint exerted the widest influence and wrought the most good. There is no doubt that, by his oral teaching and by his writings, Dr. Flint reached a larger number of students and physicians than has done any writer or teacher of medicine which this country has produced. Who can estimate the good which he accomplished through those more than forty years of medical teaching?

Dr. Flint's gifts as a teacher of medicine are known to you all. His discourse was forcible, clear, direct, and orderly; his style was conspicuous for grace and correctness; he commanded the attention of his hearers by his earnestness, and by the manifest solidity of his teachings. He never became trivial. He kept in view that the great aim of medical teaching is the diagnosis and the treatment of disease, but he did not lose sight of the fact that to attain this aim a knowledge of all branches of general and special pathology is requisite.

An important and valuable feature in his method of teaching was to require students to make an independent, thorough, and systematic study of cases of disease, and to furnish full clinical reports of these cases. This was done in order to teach a proper method of clinical examination, to inculcate the habit of keeping clinical records, and to improve the

powers of observation; for, as he has said, "The ability to observe correctly is not a natural gift, nor does it accompany, as a matter of course, the acquisition of knowledge from reading or didactic lectures. It is an art to be acquired." Dr. Flint's teaching was eminently broad, and, in the best sense, conservative. That it has worked for the formation of intelligent and competent physicians, filled with a desire to uphold the dignity of their profession, cannot be questioned. Dr. Flint will be held in ever grateful remembrance by his many pupils. Dr. Flint's gifts as a teacher and his success as a physician will become for another generation a tradition; his writings will remain an enduring legacy to posterity.

Philosophic treatment of the subject, precision, and perspicuity of language, candor of statement, and charm of style are distinguishing characteristics of Dr. Flint's writings, and have contributed to place some of them among the classical medical literature of this country. There was an absence of dogmatism in his statements, perhaps not always so acceptable to the student as to the practitioner of medicine.

Dr. Flint wrote upon subjects in all departments of internal medicine. In addition to his monumental work upon the "Theory and Practice of Medicine," he published a large number of valuable monographs. Among those published in separate form may be mentioned his works on continued fever, dysentery, diseases of the respiratory organs, diseases of the heart, phthisis, physical diagnosis, clinical medicine, and essays on conservative medicine. To this list, which is not intended to be exhaustive, are to be added a vast number of separate articles in journals, and occasional addresses. Here is not the time or the occasion to attempt a critical analysis of these works, or to give even a summary of the many contributions to medical knowledge which they contain. It is to be hoped that such an analysis will be made. A few salient points, however, may be appropriately mentioned on the present occasion.

Instructed by the distinguished clinical teachers of Harvard University—James Jackson, John Ware, and Jacob Bigelow—to whom he dedicated his book on "Clinical Medicine," Dr. Flint was a profound admirer of the great French clinician, Louis. He early adopted, and with fruitful result, the method of analytical study of a series of clinical cases. This is not the sole, but it is a valuable, method of clinical study, and Dr. Flint was a leading representative of this method of investigation.

His researches upon continued fever were made at a time when the discrimination between typhoid fever and typhus fever was not universally accepted. He contributed much to the solution of this problem. An interesting illustration of the freedom from bias and the objectivity of his clinical records is the fact that among his recorded cases were several that did not correspond to the type of either typhoid or typhus fever. These were cases of relapsing fever, a form of disease which was not generally recognised in this country at that time. So truthful, full, and

accurate were his records, that when, soon after his first publication, his attention was directed to the subject of relapsing fever, these latter cases could be readily separated, and were found to correspond in nearly every particular to the new type of fever.

Perhaps the most valuable contributions of Dr. Flint to medical knowledge are those relating to percussion and auscultation, and in general to diseases of the respiratory organs and of the heart. Certain points of distinction, now generally accepted, pertaining to the pitch and quality of the sounds of percussion and of auscultation, originated in his observations. He was the first to use the terms, and to describe clearly, vesiculo-tympanitic resonance and broncho-vesicular respiration. He was the first to point out the value of the sounds produced by the whispered voice. His explanations and his nomenclature of physical signs were simple, and opposed to over-refinements. He did more by his writings and his teaching than any one else in this country to render popular the methods of exploration by physical signs.

His studies of diseases of the heart and of the lungs are full of valuable details which cannot be entered into at this time. He was throughout his career a consistent upholder of the doctrine of the unity of phthisis, and lived to see a return to the general acceptance of this doctrine.

He contributed much to our knowledge of the natural history of disease. He placed upon a firm foundation the doctrine of the self-limitation of many diseases, a point of view which, potent as it is at present, was not so at the time at which he made his researches.

Dr. Flint was not a narrow adherent of the method of investigation by analysis of clinical cases. He was capable of wide generalisations and of logical inferences, where this method failed. A remarkable instance of this is his prediction, over a quarter of a century ago, that a certain number of cases of profound and inexplicable anæmia would be found to depend upon alterations in the gastric glands—a prediction which recent observations have confirmed.

His logical acumen is also manifest in the argument by which he advocated the causation of disease by parasitic organisms, and more especially in his clear appreciation of the *rôle* played by predisposition in the ætiology of this class of diseases.

It would, however, be doing scant justice to Dr. Flint to enumerate only the particulars in which he enlarged the boundaries of medical knowledge. His writings were characterized by a clearness of conception, an elevation of tone, and a breadth of view which made them popular wherever the English language is spoken. It may be truly said that the medical profession of England, no less than that of his native country, delighted to honor Dr. Flint.

Dr. Flint kept pace to the last with clinical and pathological research.

He retained until the end the freshness and vigor of his mind. His ideas never became fossilised. He was always open to the reception of new views when based on facts, and did not hesitate to throw overboard old ideas, no matter how long cherished, when convinced of their error. His acquirement of knowledge and his active usefulness in this world ceased only with his death—death in a manner which all may envy.

But I should not say his usefulness ceased. His virtues will linger in our memory; his career will be a pattern and an incentive; his work will endure as a monument of which our country may well be proud.

ADDRESS OF EDWARD G. JANEWAY, M. D.,

PROFESSOR OF PRINCIPLES AND PRACTICE OF MEDICINE OF BELLEVUE HOSPITAL MEDICAL COLLEGE, CITY OF NEW YORK.

Mr. President and Gentlemen:

I must confess that after the resolutions which have been read, and the remarks which have been made by your President and others, there is but little left that could be said, except to draw out some special points in the character of Professor Flint, or to add one's personal testimony to his worth. Any one who has read the works of Professor Flint, his works on the Practice of Medicine, his works on Diseases of the Heart and Lungs, his works on Conservative Medicine, and the papers contributed to societies and journals, as they have appeared from time to time in this and other cities, must be convinced that here was a man so clear in his arguments, so true in his conclusions, so pertinent in his observations, that none of us in this age can hope to equal him. We can respect his memory because of those characteristics which endeared him to us. I can think of no one whom I have met who was more studious of the manner in which he treated a fellow-member of the profession, no matter who that fellow-member might be. There was no snubbing method, which is at times adopted, and there was that present which is sometimes wanting, and which made one wish that others might have taken a lesson from him. There was always that careful consideration of what he might say, and what influence it might have in the judgment which bystanders might form of the given individual. He recognised that we were all liable to make mistakes, and, reasoning from this, he was careful of his criticisms of others in the sick-room. It was this, together with his buoyant disposition, with his hopeful aspect, and an absence of that funereal method and manner which some have, which made him so favored as a consultant, and which made his visit to the sick-room not a thing of gloom, but a ray of sunshine. If a patient was wavering between life and death, his buoyant manner was of that kind that it favored a tendency toward recovery, and threw the balance that there might be between life and death on the side of life, and not on the side of death.

He gave hope to the poor, sick patient. In his method with students I know of no one who was more enthusiastic in his study of disease, and I think one of his greatest merits was the enthusiasm with which he pursued an object, which was as great in the last year of his life as it had been twenty-five years before. I shall always recollect the first occasion when I met him in Bellevue Hospital: it was about a matter in which he was particularly interested, and when he pointed out to me for the first time a murmur as presystolic mitral, which others had considered regurgitant.

I watched the case for three years, and then told him afterward that the autopsy had demonstrated mitral stenosis, and that the water test had failed to show the least leakage of the mitral valves; and his enthusiasm when I told him this was no greater than that which he displayed over cases which he studied in the last years of his life. It was this which kept him abreast of the age. It was this, with his clear views of disease, and the different heads under which he would consider it, which made him so eminent a teacher. In one thing some thought there might be something lacking, and I admire him the more for it. It was this: He was never absolutely dogmatic about views not definitely established. He never said "This must be so," but that it remained for the future to decide. That was a fair presentation to the student's mind of the aspect of the case, and the student would often have preferred an absolute statement, so that he might not have to think whether this or that were so or not. He did not want his students to fall into that "Sleepy Hollow" of accepting the ideas of others, but desired to have them feel that neither he nor they as yet knew the whole of the subject which he was presenting to them, thus encouraging study and investigation.

But it was not only his manner in the sick-room, his manner in the consultation-room, his method with students, which made him dear to us; he also possessed a personal charm. Some one has already alluded to his method in the hospital, and his consideration to the poor hospital patients. I never saw him rude or ungentlemanly, or heard him say a harsh thing to an hospital patient; he invariably treated them in the most courteous and gentle manner, being evidently sorry for their sickness. I know of no greater test than to stand in the dual relation of teacher and physician. The tendency to use the patient for class demonstration, at the expense of his health, is sometimes noticeable, and has to be carefully guarded against; and he was extremely careful about this matter.

But it was not only in these respects that he was so praiseworthy. His studiousness has been referred to, and how thoroughly he kept abreast with the age, as an illustration. When the question of bacteria came up, he was already prepared to receive it. His idea was that these things must be so: he had already reasoned out that there must be such things,

and all he wanted was the proof that they existed. In this he had outstripped many others younger than himself, from the fact that he had foreseen and foreknown that there must be such things, and that they would be proved to be the originators and causers of disease.

I could go on for an indefinite time speaking of his great works, of his discoveries, of his genius, of his observing power, but enough has been said, and I shall conclude by expressing the conviction that we have lost the greatest physician of America in the death of Professor Flint.

REMINISCENCES OF PROFESSOR FLINT, BY J. LEWIS SMITH, M. D.,

CLINICAL PROFESSOR OF DISEASES OF CHILDREN, BELLEVUE HOSPITAL MEDICAL COLLEGE.

Mr. President and Gentlemen:

In 1836, Prof. Flint, in his twenty-fifth year, and three years a graduate in medicine, commenced the practice of his profession in Buffalo without acquaintances and with no reputation. In a young and bustling city, with few facilities for study and improvement in medicine, he possessed the qualities which enabled him to create the opportunities which he needed, and to make, in time, the city of his residence one of the medical centres. Buffalo at that time, without a medical organisation worthy of the name, with physicians intent on acquiring and retaining a practice, having no regard for the higher demands of the profession, did indeed seem an uncongenial and unsuitable place for Prof. Flint, whose highest ambition was to improve in medical knowledge, and whose life-long endeavor was to make discoveries in the nature and treatment of diseases which would benefit the profession and the world.

Among the first diseases investigated by Prof. Flint after his settlement in Buffalo were those due to marsh miasm, and it was not long before he had made a sufficient number of observations to enable him to publish some novel but correct views in reference to their treatment. In 1841, forty-five years ago, the "American Journal of the Medical Sciences" published from his pen a statistical paper designed to show that intermittent fever, which he had treated among the troops stationed at Buffalo, required no preparatory treatment by mercurials or otherwise, before the use of quinine, and that quinine would control this disease more certainly and with safety, if given in the intervals of the paroxysms, in as large doses as ten or fifteen grains. Both these opinions, then new to the profession and contrary to the usual practice, attracted attention, since they were supported by statistics; and, as we all know, they are now accepted as true, and the present mode of treating this disease is the same as he recommended. In the same year he published a paper on dyspepsia as related to the state of the mind. From this time, during his entire life, he was a frequent contributor to the medical journals.

Among his early papers, that to which, I think, he attached the most importance, bore this title: "The Pathological Relations of the Medulla Spinalis." It was published in the April number of the "American Journal of the Medical Sciences" in 1844. This paper was also statistical, the views expressed in it being derived from an analysis of fifty-eight cases. The opinions contained in this article, as well as the instruction upon the same subject, which in former years he never failed to give to each class of students, have been of great value to the profession. Patients in a depressed state of system, and especially the anæmic, frequently have pain and tenderness at some point upon the lateral or anterior aspect of the trunk, and pressure along that part of the spine where the nerves originate which supply the affected part increases the pain, and is therefore a safe and certain means of diagnosis. When pressure upon the spine intensifies the pain, the latter is neuralgic, and not inflammatory; and yet the mistake is often made of diagnosticating an inflammation, and treating the patient accordingly, when the simple test mentioned above would have corrected the diagnosis. Prof. Flint recently stated to the writer that many years after the appearance of his paper in the "American Journal of the Medical Sciences" he was still more deeply impressed with the importance of the subject upon which he wrote, when, in accompanying the most distinguished clinical teacher in Europe through the wards of a Parisian hospital, he was able to correct, by the simple test with which he was familiar, the diagnostic error of the professor, who had stated that one of the patients whom they were examining had "peritonite."

My acquaintance with Prof. Flint commenced in 1851, when a medical student in the Buffalo Medical School. The "Buffalo Medical Journal," established and conducted by him, was then in its fifth year. From the ability apparent in its editorials and original articles, many of them from his pen, it was widely taken in central and western New York, in the adjoining states, and in Canada, and it no doubt aided very much in drawing students to the Buffalo Medical College, then in its fourth year, and in which he held the professorship of theory and practice. At this time he read his lectures, and they were listened to with interest, and always by the entire class. It was not, however, till the following year, 1852, when, as an advanced student, I was appointed one of the house staff of the Hospital of the Sisters of Charity, that I became more fully acquainted with the subject of this sketch. No one more highly appreciated hospital advantages, as affording the opportunity for medical improvement, than he at this time, and, indeed, through his whole life. He had previously made use to the best advantage of the clinical opportunities which the old almshouse afforded, and now he had the privilege of studying diseases among a better class of patients, and with better surroundings. During my stay in the hospital, every case in the service

of Prof. Flint that possessed any interest was recorded in his note-book, and his thorough examination of patients, in order that the notes might be complete, necessitated a prolonged stay on his part at each visit in the hospital. The late Prof. Bennett, of Edinburgh, said that "a large metropolitan practice is the bane of the profession," since it prevents the proper examination of cases and the investigation of subjects which are of interest to the profession. Prof. Flint appeared to have the same belief, for he seemed annoyed and disappointed when professional engagements in the city prevented his daily visit to the hospital, or compelled a shortening of his stay there. It was apparently his endeavor that each day should add something to his stock of medical knowledge, and to a better understanding of the diseases which he met in the hospital.

It may not be improper to state that at this time some of the more prominent physicians of Buffalo, who had not participated in the founding of the college, were not in sympathy with it. This hostile element in the profession was represented by its ablest men in the board of visiting physicians of the hospital. The college, of course, sustained little injury, for it had an able faculty, consisting of such men as John C. Dalton, Frank H. Hamilton, George Hadley, and James P. White; but the consciousness of living and working in an unfriendly atmosphere would have been very dispiriting to one less occupied in medical studies than Prof. Flint. The ill-feeling manifested toward the college and those connected with it was apparently ignored by him.

During my stay in the hospital, among the subjects which occupied the attention of Prof. Flint was what he designated "Variations of Pitch in Percussion and Respiratory Sounds," and his pocket note-book, in which he recorded his observations, was his constant companion. He contemplated sending an essay relating to the subject to the Committee on Prizes of the American Medical Association at its next session; and the interest which he manifested in obtaining the material for the paper seemed to increase from day to day, and was noticed by all who followed him through the wards, and who were often asked to verify his observations. No one who saw the interest which he manifested in the subject, and his careful examination of cases, was surprised when the announcement came from a distant city, and appeared in the daily papers, that the annual prize of the United States Medical Association had been awarded to Austin Flint, of Buffalo.

Another subject which engaged his attention was the differentiation of typhus and typhoid fevers. A considerable number of Irish immigrants were admitted into the hospital, having a malignant form of typhus fever which they had contracted on shipboard; and when they reached Buffalo on their westward journey they were too sick to go farther. I have never met in this city, in a practice of thirty years, so severe and fatal a form of

this disease, in which most of the patients presented a mottling of the surface like that of measles. Although Sisters and nurses were stricken with it, some of them dying, each case was thoroughly examined; and the symptoms, and in fatal cases the lesions, were recorded. In due time a statistical paper, containing the results of these examinations, appeared from the pen of Prof. Flint.

To me it was evident that the example of a life so devoted to the study of diseases had a very salutary effect upon the students in the college, many of whom, having no previous knowledge of medicine except what they had learnt from the country practitioner and his obsolete books, and having chosen the profession of medicine simply as a means of livelihood, as one would learn a trade, appreciated for the first time the dignity and importance of the calling upon which they had entered, and saw that it merited the consecration of the entire life to its study and practice.

The life of Prof. Flint, during the thirty years which have elapsed since the period of which I have been writing, is known to the profession. That he became the most prominent physician in America, and was honored throughout Great Britain as no other American physician has been, was due to his life-long and uninterrupted study of diseases. Nothing that arose in politics, or church, or society diverted him from it. His investigation of any disease or subject in medicine which engaged his attention was thorough; and while he treated with proper consideration the views of others, and listened to suggestions from any source, even from students, the information upon which he most relied he obtained at the bedside, and he did not express a positive opinion until he had made so many observations that he was certain of its correctness. Therefore no pupil of Hippocrates had greater faith in the teachings of the great master, than those who were brought into intimate relation with Professor Flint had in his. Whenever he made a positive statement in regard to any medical subject, those acquainted with him knew that it was true, since it was based on a thorough investigation. In matters of doubt he always gave prominence to facts which conflicted with the theories which he believed to be true.

The success of Prof. Flint in his profession seems to me to have been largely due to his practice of taking and preserving notes of cases at the bedside, which he began to do soon after he commenced the practice of medicine, and continued to do for many years, and, I think, more or less till the close of his life. By recording the history and symptoms of a case, he made a more thorough examination of the patient; and in time he obtained an amount of statistics which were of the utmost value to him in his writings. Very few discoveries which threw light on the nature of diseases, or were likely to be beneficial in their treatment, escaped his notice. Only a few days before his death he questioned the writer in reference to intubation of the larnyx in the treatment of croup,

so successfully performed by Dr. O'Dwyer in the New York Foundling Asylum; and at an age when most physicians think of retiring from the active duties of life he continued to devote half an hour each day to the study of German, in order that he might read German medical literature with more facility.

The Sydenham of the nineteenth century is taken from us, but his great work—his "Treatise on the Principles and Practice of Medicine"—the revision of which was his last professional labor, remains with us. No book has had a more salutary effect on the medical profession in America than this; for, while it is excessively read by physicians in the cities as well as in country towns, it contains the most recent opinions which have been established by clinical observations and experiments, while the treatment which it recommends is in a high degree conservative, and is that which is accepted by the most skilful and experienced practitioners. The writings of the great teachers in our profession have sometimes, as we know, done harm, more perhaps than benefit, like those of Broussais; and even in the writings of so recent and practical a physician as Trousseau, there are passages which we now wish had never been penned; but in the treatise of Prof. Flint, so painstaking and thorough was he in the investigation of any subject on which he wrote, that, in my opinion, very few sentences can be found in the 1,100 pages that do not possess enduring worth. I recently heard him say of the "System of Surgery," written by his intimate friend, the late Professor Gross, that even if its modes of treatment should become obsolete, it would always be valuable as showing the status of surgery in the nineteenth century. A similar remark might be made of Flint's Treatise, that it will always possess value as showing the state of medicine in the last half of the nineteenth century, as that of Sir Thomas Watson does in the first half. But this is too low an estimate of so valuable a book. No one can read Flint's Treatise without recognising in it an enduring basis, so that with the additions made to it, from time to time, of discoveries as they occur in medicine, it will probably continue to be one of the text-books consulted for information and guidance long after the present generation has passed away.

ADDRESS OF THEODORE R. VARICK, M. D., JERSEY CITY, N. J.,

SURGEON-GENERAL OF THE STATE OF NEW JERSEY.

Mr. President and Gentlemen:

Assembled as we are on this sad occasion to commemorate the death of our late friend and associate, Dr. Austin Flint, I am reminded of the following sentence from the Talmud: "The deeper the sorrow, the less tongue hath it." No word-painting can do justice to his purity of life, and no eulogy can add one ray to his brilliant record.

It is a privilege to be here to-night to pay homage to the memory of a

great and good man, and to join with you in condolence in your great affliction. The vacant chair calls up many reminiscences of professional and social life, which add pathos to the fact that ties of many years' duration are forever sundered. We miss his genial smile, we miss his friendly grasp, and we miss his cordial salutation. His immediate associates mourn the loss of a firm and trusty friend; and the medical profession at large, whether in council or in the arena of science, recognise the loss of one whose ability and experience as a leader cannot easily be replaced.

A strong individuality characterized his whole career, and the influence of his example will serve as a beacon light for future generations. Although firm in his opinions, he was free from dogmatism, always ready and happy to listen to argument when a difference of opinion may have arisen. Conservatism as a practitioner was a marked characteristic: keeping fully abreast of the advances in pathology, therapeutics, etc., each innovation was carefully scanned and thoroughly sifted before receiving his endorsement.

His literary productions are too well known to call for any extensive remarks from me. A prolific writer, he never wrote except for a purpose, and he had something of value to impart. His works, as granaries, teeming with the products of a fertile brain, a logical mind, a mature judgment, and the utilisation of a vast clinical experience, are a source from which the student may seek instruction, and to which the busy practitioner, in moments of doubt, may appeal for guidance. As an evidence of the high appreciation in which, as a writer, he is held abroad, and which has been referred to on a previous occasion, he is alluded to in a recent number of the London "Lancet," as "the Watson of the United States." Whoever is familiar with the writings of Sir Thomas Watson will appreciate the magnitude of the compliment.

It was at the bedside as a consultant that his personal magnetism was most thoroughly observed,—as on one occasion a patient fearfully ill remarked, "Doctor, your coming is as a sunbeam; it always inspires hope and imparts confidence." Whether in victory or in defeat, the same calm, unerring judgment was manifest, the same consideration for his associates was there. Never pluming himself on his superior acumen, and never betraying the errors of those less gifted, it was this magnanimity of character, this innate courtesy, that endeared him to all with whom he was brought in contact.

Twenty-three years ago, at the bedside of a dying patient, I first met him. The friendship, which had its birth on that occasion, became more firmly cemented by the lapse of time, and by frequent professional and social intercourse.

I recollect meeting him on one occasion, in 1876, at the Centennial Exhibition in Philadelphia, when, in the course of conversation, he expressed

his belief that when he should be called to yield up his life it would be by a sudden stroke. How truly has his prognosis been verified. Stricken down with scarcely a moment's warning, he died with his harness on, and his face to the foe. Verily, a mighty oak has fallen, a great physician is dead. Well may we exclaim with the poet,

> "But O for the touch of a vanish'd hand,
> And the sound of a voice that is still."

Although dead, he speaketh. He speaks to us through a record of spotless purity; he speaks through a life of tireless industry; he speaks to us of a fealty to the profession of his choice more firmly welded by the lapse of time, and of an unflinching courage when its integrity may have been threatened or its honor assailed; and, finally, he speaks to the whole medical profession in the interests of peace, that discord may cease, that petty jealousies may be wiped out, that, meeting on a common level, all may be gathered in one common fold, presenting to the world the spectacle of a united family, having one faith and worshipping at one common altar.

ADDRESS OF JOSEPH D. BRYANT, M. D.

SURGEON-GENERAL OF THE STATE OF NEW YORK.

Mr. President and Gentlemen:

I came here to-night much more desirous of listening to the remarks to be made by others than of taking any part in the proceedings myself. I had hoped that all of the time would be occupied by those who had known the deceased longer than I, whose lives and labors had been contemporaneous with his, and who, perchance, had shared with him in the doubts and fears of early life, rejoiced with him for the triumph of their chosen profession, and who, perhaps, may be now, as he was, calmly, yea, even majestically, contemplating the approach of that final scene which proclaims to the living that another one is fallen, and unfolds to the dead the knowledge of the rewards in store for the faithful.

I cannot speak of the late Doctor Flint in that contemporary sense, for it has been my lot, along with the great mass of the profession, to gaze from afar off, and, while admiring his virtues, to most earnestly hope that the power of his example might make its influence felt on all around him.

My personal observations of the deceased date back to the time of my entrance as a student to the medical college with which he was connected at the time of his death. I now recall to mind with vivid distinctness some of the impressions I then had of his personal characteristics. In his manner he was gentle, kind, and indulgent; yet his earnestness of purpose and his loyalty to principle were as apparent then to the unsophisticated student, as they have been since to all of us in emergencies

calling for their manifestation. His to-the-minute punctuality, his unaffected and chaste utterances, the absence of ambiguity and circumlocution, his invariably temperate and kind allusions to the acts of his professional brethren,—all these virtues, Mr. President—for indeed they are such—were distinctly characteristic of him then; and, by the influence of their presence, admonished every graduate of the Bellevue Hospital Medical College since that time, at least, to be kind, earnest, consistent, punctual, virtuous, and temperate in all things, and never to forget to not speak at all if one must speak unkindly.

Eighteen years ago these were impressions only, but when, somewhat later in life, he came to my aid as a consultant, these impressions ripened to settled convictions; and, later still, while associated with him in college councils, the ripening convictions of the past became established facts of the present.

In his intercourse with his college associates he was ever the model gentleman,—conciliatory, unostentatious, unexacting; still always convincing, rather by his gentle, earnest manner, and by that unutterable logic which always surrounds the moral convictions of an honest man, than by the weight of the power he possessed.

Had he been a soldier, his would have been a rare combination of that gentleness and courage which is "mild in manner, fair in favor, sweet in temper, fierce in fight." The profession at large has lost one of its brightest and best ornaments; but the loss falls more heavily upon its younger members, who are bereft not only of a wise and honest counsellor, but also of the example of a model man, in whose footprints it was ever safe and honorable to tread. Let us, therefore, while we replenish our faith in human constancy by recalling and admiring his moral goodnesses, not forget that the most sincere and perfect eulogium that can be pronounced on any great and good man is the emulation of those virtues that gave to him his greatness.

ADDRESS OF FRANK H. HAMILTON, M. D., LL. D.,

PRESIDENT OF THE NEW YORK SOCIETY OF MEDICAL JURISPRUDENCE AND STATE MEDICINE.

Mr President and Gentlemen:

I wish to say a few words in reference to Dr. Flint, not as his biographer, but only to unite with you in this proper tribute to his memory.

It was my privilege to have enjoyed the personal acquaintance of Dr. Flint for more than forty years, during most of which time we were associated in teaching, in hospital, and, as residents of the same town, in private practice, and I am not aware that our relations of friendship ever suffered even a momentary interruption. In his death, therefore, I have sustained a loss which it would be difficult at my period of life to repair:

but this is hardly the occasion to speak of our personal losses, especially when we recall the fact that by this death many closer ties of friendship than any we enjoyed have been severed.

We are here to express our approbation of the life and labors of one whose work is ended, and to deplore the loss which the science of medicine, and incidentally ourselves and the world at large, have sustained. We cannot, however, properly estimate the value of those labors without a knowledge of the character and qualifications of the man by whom they were done.

Medicine is far from being an exact science. By the accumulated observation and study of many years it has made steady and substantial progress; but there remain many debatable questions, many decisions subject to revision, reversal, or confirmation in the higher courts; and it is only by men who possess the highest intellectual and educational qualities, by men who are careful observers and laborious students, and who have had opportunities to observe and facilities for study, and, above all, by men who are conscientious, who recognise their responsibility to medical science, the profession, and the world,—it is only, I say, by the verdict of such men that those questions in medical science which are still at issue can be properly decided. And such a man was Dr. Flint. He was a voluminous writer, but I do not think he ever wrote a page except for the purpose of communicating something which his personal experience or studies had taught him was of value, and which he thought it his duty to communicate to others. He wrote because he had discovered a truth, and he desired to put it on record for the common use of mankind.

I will only detain you, gentlemen, to say a word as to his professional relations to medical men, and especially as a "consulting" physician, in which *rôle* he was most conspicuous in the later years of his life; and perhaps I cannot better illustrate his character in this capacity than by referring you to his "Commentaries" on the National Code of Medical Ethics, of which code he was the living embodiment and daily practical exponent. Guided by its excellent moral, social, and ethical precepts, and by his own natural instincts, while he never ceased to regard the welfare of the sick as paramount to all other considerations, he reserved to the consultant his own plain and indefeasable rights, and sought always to protect the associate physician from unjust imputations or inferences. He sought also to secure for him, whenever he was entitled to it, the confidence of the patient and his friends. To those who did not know personally Dr. Flint, these written "Commentaries" will always supply a faithful and complete portrait.

He has written his last page; and as we close the book and turn away, a feeling of satisfaction mingles with and chastens our sorrow, for the book has left nothing to call for an apology, nor one harsh word to disturb our reflections.

ADDRESS OF W. H. FLINT, M. D.,

PHYSICIAN TO THE PRESBYTERIAN HOSPITAL, NEW YORK.

Mr. President and Gentlemen:

It affords me a melancholy yet genuine gratification to make a trifling contribution to the rich tribute of most just and merited eulogy, so eloquently paid to Dr. Flint by gifted speakers this evening. I can add nothing to the rare encomiums they have bestowed upon Dr. Flint for all the generosity and helpfulness he displayed in his intercourse with his professional brothers, for the purity of the motives which impelled him to each step of his career, and for his grand successes, achieved by patient and persistent labor, thus illustrating the truth uttered by the poet Longfellow, when he says,—

"The heights which great men won and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward, in the night."

The good deeds which Dr. Flint openly performed are recognised and praised on both continents. The good which he privately did no one can know. The object of my present remarks is to throw a little light upon some kindly deeds of private charity, over which, during his lifetime, Dr. Flint carefully drew the veil of silence and forgetfulness.

When he crossed the ocean to gather new laurels for American medicine, he left to me the duty of dispensing a portion of his bounty among certain indigent but deserving people, whose very existence he had never mentioned, but whose lowly homes had long been brightened by his pecuniary assistance and by his personal professional ministrations. On his return he declined to allow me to relieve him of a part of his self-imposed burden of unremunerative professional labor, preferring to still remain, himself, the bearer of hope and cheer and comfort to his suffering *protégés*.

This simple example may serve to illustrate one phase of Dr. Flint's noble character, and this I desire to add as my laurel-leaf to the unfading garland already woven by countless loving and reverential hands.

ADDRESS OF FREDERIC S. DENNIS, M. D.,

PROFESSOR OF THE PRINCIPLES OF SURGERY AND CLINICAL SURGERY, BELLEVUE HOSPITAL MEDICAL COLLEGE.

Mr. President and Gentlemen:

I do not feel as if I could say anything to add to the solemnity of this occasion. There is one feature which characterizes this meeting, and that is, the perfect unanimity of sentiment in regard to all the words of eulogy

pronounced upon the late Dr. Flint. This unanimity of sentiment is not limited to those in this room: it extends throughout the city, and throughout the length and breadth of this great country. The same feeling pervades the members of the profession in Europe, and the "Lancet," in speaking of our departed friend, styled him the Sir Thomas Watson of American medicine. He was indeed a great and noble man, and we all feel deeply the sorrow which we have been called upon to endure. His good name is the greatest heritage which could be left, and we have, embodied in his character, all that was great, and pure, and noble. We have lost a valued friend, and the profession of medicine has lost one of the brightest ornaments which has ever adorned it.

ADDRESS OF J. W. S. GOULEY, M. D.,

SURGEON TO BELLEVUE HOSPITAL, NEW YORK.

Mr. President and Fellow-Members of the County Association:

I have come to pay my tribute of respect and affection to the memory of our departed dearly beloved friend and associate, Dr. Austin Flint. I had the honor to make his acquaintance twenty-six years ago, when we lived under the same roof. This acquaintance ripened into the warmest friendship, which ever remained unclouded. For twenty-five years we were colleagues in Bellevue hospital, and in our frequent interviews during that time he always greeted me with a smile and other expressions of kindness, which I can never forget. These manifestations of good-will, together with his many other noble traits of character, endeared him to me, as they did to all with whom he ever had social or professional relations. I never left his presence without a feeling of reverence, such as every one experiences when he has communicated with a good and great man. He was a striking example of an ingenuous soul, allied with a lofty intellect. His methods were simple, his achievements great. His gifts, whether in kind words or in worldly goods, were made without ostentation, but his charity was always abounding. None ever applied to him for counsel, and went away empty. His advice, whether on medical or other topics, was never given until he had carefully considered the subject, and his conclusion was always sound and practical. When he differed in opinion from a colleague, or even from a junior member of the profession, he always stated his own convictions in a courteous, mild, and inoffensive manner, however strong these convictions might be. It is related by one of the old internes of Bellevue hospital, that on a certain occasion Dr. Flint was called upon to settle a disputed point in diagnosis. After having made a careful and exhaustive examination of the patient, he gave his opinion in his usual felicitous manner. The youth whose diagnosis was traversed by the doctor said, with much warmth,—"Sir, I still think that I am in the right." The doctor smiled benevolently upon the inex-

perienced junior, and, without the slightest manifestation of impatience, said, in his turn, and in the mildest tone,—"My friend, I am under a strong impression that you are in error, for the following reasons: . ." and in a short lecture convinced the youth, without wounding his feelings, and instructed all who heard him. The lesson was never forgotten, and it is even now often referred to in illustration of the characteristics of the great master. Nearly all the ex-internes of the hospital have some such experience to give of their relations with Dr. Flint. They all loved him for his charming personal qualities, and admired him for his great professional attainments. There was no time when he declined to perform any labor tending to the advancement and honor of the profession he so loved, and those associated with him felt that they should undertake nothing without his counsel and approval. He was always the chief in good deeds, and he sorrowed for evil-doers. His place in the profession will remain vacant in this generation, and the remembrance of his good actions will ever be green in our minds.

You all know how much he labored for the good cause, how much scientific work he performed in the State, District, and County Associations, how much influence he possessed over individuals and over the whole profession, how cheering was his presence in the sick-chamber both to the patient and to the medical attendant, and how much he was valued for these qualities.

Others have already spoken of him as a teacher and author. I most heartily concur with them in their estimate of his powers in both of these capacities, and believe that as an author, always much in advance of his time, his views will be sustained, and will be current long after this and many other generations have passed away.

He labored most devotedly to the last for the good of his kind, and died in "harness," full of years and honors. When our great and good friend passed away, we each shed a tear, not for him, but for the loss of him!

ADDRESS OF E. S. F. ARNOLD, M. D.,

TREASURER OF THE NEW YORK COUNTY MEDICAL ASSOCIATION.

Mr. President and Gentlemen:

It seems almost presumptuous to attempt to add anything to the eloquent tributes to the memory of our deceased friend, Dr. Austin Flint. Few had more reason to be grateful to him than myself. My first nearer acquaintance with him was at my own bedside, when struggling through the longest and severest sickness I ever had, now over twenty years ago. He visited me many times in Yonkers, and to his skill and encouragement my recovery was doubtless largely due. Nor was this the only occasion under similar circumstances that I have had the benefit of that advice and assistance he was as ready to give to his professional breth-

ren as to his more profitable patients, and I may say to all who needed him, rich or poor. The doctor was an embodiment of kindness, but when occasion or the maintenance of a principle required it, his firmness was no less conspicuous. When the State Medical Society threw aside the ethics of the American Medical Association, of which he had so recently been the honored President, and thereby cut itself off from representation in that body, Dr. Flint became one of the first of the founders of our State Medical Association, and subsequently manifested the greatest interest in its progress. He was ever willing to assist in its councils, ever ready to prepare a paper when called upon to add to the interest of its scientific work.

When our library last summer was, within the space of two short months, by the munificence of four or five of our brethren, converted from a room with a doorplate and four bare walls into a library with already well filled book-shelves, Dr. Flint was just a little in advance of the other generous donors. When it was proposed to raise a building fund for the future purposes of the Association, Dr. Flint at once put down his name for one of the largest donations. His sympathies were eminently practical. His loss in the councils of the Executive Committee of the forthcoming International Medical Congress is well-nigh irreparable. He has left a chasm which, however it may be bridged over, can never be filled up. I may add here, too, that he was the first individual to make a liberal donation to facilitate the work of the committee. With all his many activities outside of his laborious scientific and professional work, no present duty was ever left undone. Fresh or fatigued, his energies never flagged. Though complaining for more than two weeks before his death of loss of nervous energy and of exhaustion, on my suggesting to him to rest for the day and forego his lecture, he observed, "I have never omitted a lecture or quiz, and I shall try it, though I fear I may break down." His will power carried him through. No loss of his ordinary vim was perceptible to his hearers. It was permitted to him to attend, to the very last item, his college duties,—thus, as has been observed, rounding off his career, and leaving a bright and shining example to the many thousands who have profited by his personal teachings. Nobly, indeed, has he employed the talents which the Almighty entrusted him with; and now that, full of years and honors, and enshrined in our hearts and memories, he has peacefully and unconsciously lain down to his last rest on earth, we have reason to believe that it will be to awaken to that blessed summons, "Well done, thou good and faithful servant: enter thou into the joy of thy Lord!"

ADDRESS OF ISAAC E. TAYLOR, M. D.,

PRESIDENT OF THE BELLEVUE HOSPITAL MEDICAL COLLEGE, NEW YORK.

Mr. President and Gentlemen:

On the eventful evening of March 13th, after a long session of the faculty of the college, my colleague and friend, Dr. Flint, conveyed me in his carriage to my home, which was but a short distance from his own residence, and left me at 11:30 P. M. Scarcely had he retired to his couch for rest, when the "still, small voice" was heard by him, that came to call him to a higher and a nobler sphere. Noiselessly turned the key that shut him from our view, but we realise, alas! that he is absent from our midst forever.

To the history of his life, which you have heard so faithfully depicted by those who have preceded me, I cannot presume to add anything. Never were eulogies more justly merited, and I most cordially join in the tribute which they offer to his memory. The straight line of our lives, as regards time, begins to bend when we reach the age of two score years and ten; but our departed friend progressed towards the allotted period assigned to man so gracefully and serenely, that his life was a beautifully rounded and complete one.

Words, on the present occasion, would appear to be almost useless. His unstained purity of private life, his virtues in both public and private, which are so highly esteemed, endeared him to us all. Truth was the shield of his character, and neither malice, nor envy, nor meanness could find a lodgment in his manly nature. In the treasure-house of our hearts and memories we will build his monument, and with the bright example of his life ever before us, may we too, like him, find "light at eventide."

ADDRESS OF J. P. GARRISH, M. D.,

EX-PRESIDENT OF THE FARMER'S CLUB, NEW YORK.

Mr. President and Gentlemen:

I should feel that I had neglected my duty if I did not say something in reference to Professor Flint. I can, at least, endorse the remarks of Dr. Janeway. He possessed a nobleness and goodness of heart that few of us can lay claim to. He visited my family in sickness, and I can testify not only to the usefulness of his services, but to his genial manner and to the promptness with which he responded to my call.

As Dr. Dalton beautifully remarked at the recent commencement exercises in this building, Dr. Flint has taken his final and highest degree, conferred by the power that is supreme over us all; and the parchment of his biography now has the stamp of Emeritus. It remains for us to profit by the lessons of that noble life, to make good use of the teachings

and example which he has left behind him. It is fitting, in token of our sorrow and of our recognition of his worth, that we should place on his tomb the lily and the rose.

ADDRESS OF GEORGE T. HARRISON, M. D.,

ASSISTANT SURGEON WOMAN'S HOSPITAL OF THE STATE OF NEW YORK.

Mr. President and Gentlemen:

The impressive character of the proceedings of this evening are but too well calculated to remind us that a great light has been extinguished. Aye, a planet of first magnitude has disappeared from our heaven. A short time ago we rejoiced in its beams; to-day our spirits are weighed down by the gloom of a profound darkness. As soon as the death of Dr. Flint was announced, the medical journals throughout this great land, with singular unanimity, voicing public sentiment, vied with each other in giving expression to a feeling of regret at the loss it involved to science, in extolling the magnitude of the work that he had accomplished, and in paying tribute to the beauty and symmetrical proportions of his noble character. It especially behooves this Association ever to keep the memory of Dr. Austin Flint green for what he has done in its behalf; and may we, one and all, members of the Association, inspired by the lesson of his life, endeavor hereafter to perform our duties more faithfully, so that our lives, like his, may be a benison to humanity.

ADDRESS OF HERMANN M. BIGGS, M. D.,

INSTRUCTOR AT THE CARNEGIE LABORATORY, NEW YORK.

Mr. President and Gentlemen:

There is certainly nothing that I can say that will add anything to the eulogies that have been delivered this evening. But personally I would say, that from the time when I first saw Dr. Flint at his clinic, in my first week as a medical student, up to the time of his death, I have always felt that no one whom I have ever seen or known has inspired in me such personal regard and affection, and such admiration, almost amounting to reverence, as he did, because of the nobility of his character, his extraordinary abilities as a physician, and his great courtesy and kindness to all.

ADDRESS OF P. J. LYNCH, M. D.,

OF NEW YORK CITY.

Mr. President and Gentlemen:

I can cordially indorse everything that has been said concerning our lost associate, Dr. Flint. I had the pleasure of enjoying his counsel as consulting physician, and became aware of his thorough disinterestedness of

character, and his willingness to do all in his power for the benefit of those in whose behalf he was called. I need not make any allusion to the high regard in which he has been held by the profession throughout his long and brilliant career. I am pleased, Mr. President, to thank you for allowing me this opportunity, unexpected though it is, to meet with you and express the love we all feel for the memory of Dr. Flint.

ADDRESS OF J. E. JANVRIN, M. D.,

SURGEON TO ST. ELIZABETH HOSPITAL, NEW YORK.

Mr. President and Gentlemen:

I do not think I can add anything to what has been already said. I have never been associated with Dr. Flint in his connection with college or hospital, but, like many other busy practitioners, I have often sought his advice as a consulting physician, and I can certainly coincide with and emphasize everything that has been said with reference to his character to-night.

ADDRESS OF GEORGE L. PEABODY, M. D.,

PROFESSOR OF MATERIA MEDICA, COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK.

Mr. President and Gentlemen:

I can heartily concur in the words of eulogy to which we have all listened with so much satisfaction this evening, and I only wish that anything had been left unsaid in order that I might say it. I will not take up your time, or the attention of the meeting, by reiterating anything that has been already said so much better than I could say it, but would merely add my word of heartfelt regret at the loss we have all sustained, a loss from which we shall be many years in recovering.

ADDRESS OF ELLSWORTH ELIOT, M. D.,

TRUSTEE OF THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK.

Mr. President and Gentlemen:

I am glad to say also a few words regarding our late friend, Dr. Flint. My recollection dates back to the time when he first came to this city. If I am right, sir, it was generally believed that a man, in order to succeed then, must have begun here when he was a young man, and have the favor of certain influential physicians. I heard at that time that Dr. Flint would not be successful, and would not be sufficiently encouraged to remain here, as had happened to other distinguished physicians; but those who said so proved to be false prophets. He made his way, I believe, in spite of some opposition here, and reached the highest point. It

was my lot oftentimes to meet him in consultation among the rich and the poor, and I think all present here will agree with me in this,—they never had Dr. Flint's assistance that they did not want it again; and, more than that, the satisfaction which he gave the physician was always shared by the patient. He invariably made the most favorable impression. I know also how often he was appealed to in cases of difficulties that will occur occasionally between members of the profession, and how successful he was in settling disagreements and estrangements, and in reconciling friends, by simply pointing out in the plainest and simplest language what was right and just. We have heard here to-night how highly he was esteemed. I happened to see to-day, while looking over the transactions of the State Medical Society, a tribute which he paid to his friend and life-long associate, Professor James P. White, and I am glad to have a copy of it here to-night, as it seems so applicable to his own case:

"The giving away of life was sudden, brief, and unexpected. It may be said of him that he died in the harness, and I feel assured that his choice would have been so to die. . . . . His last, short illness was unattended by much suffering. He had made every preparation for death whenever it might come. His mind was unclouded up to the last hours of life. For these sources of consolation, they who remain to mourn for a temporary separation from one who has been called to another existence before them, have reason to be grateful to the Divine Disposer of human events. To him was vouchsafed a long and useful and honorable career, fraught with happy memories. In this reflection there is much to console the bereaved widow and other relatives; but it is a saying not less true than trite, that, in order to be reconciled to such afflictions, a higher than human power is to be invoked."—*Trans. Med. Society of the State of N. Y., 1882, page 346.*

In conclusion, I would say that I do not wonder, in view of all that has been said as to Dr. Flint's good traits, that even his antagonists—I will not say enemies, for I do not believe he had any—persist, under peculiar circumstances, in praising him.

ADDRESS OF CHARLES E. LOCKWOOD, M. D.,

EX-SANITARY INSPECTOR OF THE CITY OF NEW YORK.

Mr. President and Gentlemen:

I do not know that there is anything that I can say in addition to what has already been stated. It was not my pleasure to know Dr. Flint personally for a very long period, but during that time I certainly was impressed by his gentlemanly manner, his learning, and his great kindness of heart, as well as by the sympathy he always felt for any one who was in trouble.

ADDRESS OF IRA B. READ, M. D.,

COMPANION OF THE FIRST CLASS OF THE MILITARY ORDER OF THE LOYAL LEGION OF THE UNITED STATES OF AMERICA.

Mr. President and Gentlemen:

I can only say that I heartily coincide with all that has been said; and the additional thought has come to me to-night, as I have listened to these well merited eulogies, that they are not words of fulsome praise, so often given only to the dead. We felt these in our hearts while he lived, and we would have said the same thing of him, if called upon, while he lived; and so the words of to-night but reflect the sentiments that have been in our hearts through the years that have passed.

ADDRESS OF J. R. MACGREGOR, M. D.,

OF NEW YORK CITY.

Mr. President and Gentlemen:

It would be presumptuous in me, even if I had the ability, to endeavor to offer anything in addition to what has been already said. Those who have been more intimately associated with our professional brother than myself have this evening paid eloquent and fitting tributes to his memory, both as regards the personal qualities that he exhibited, and what he had accomplished for the advancement of scientific knowledge in the profession, although I had seen enough of him to acquire valuable knowledge from his precepts, and to learn to love the man. It is in the experience of us all that during our lifetime we meet with some remarkable and prominent personages. I think that I am not extravagant in making the statement that within my whole range of experience I cannot bring to mind one who has more profoundly impressed me as being the living embodiment of all those qualities which become a man. I shall not—I cannot—attempt to analyze his character or his acquirements, but will venture to offer a single sentiment. I see around me some whose eyes are bright, and whose faces are impressed with the ardor of youth. With them life is yet largely before them, and they are animated with those hopes and ambitions which stimulate them on the road to distinction and honor. To such I would point to the career of our departed friend as bearing the true qualities for those who are aspiring. I also see around me those whose brows bear the furrowed traces of time, and in whose locks the sprinkling of silver betokens that they are no longer young. They have arrived at that period of life when the mind delights to revert to the recollections of the past, and to live over in memory the scenes that have long gone by. For them I would invoke a cherished remembrance of the gifts and graces of our lamented friend, as a pleasant fragrance to sweeten the solace of declining years.

ADDRESS OF SAMUEL T. HUBBARD, M. D.,

PHYSICIAN TO THE PRESBYTERIAN HOSPITAL, NEW YORK.

Mr. President and Gentlemen:

I did not come here this evening with the expectation of saying a word, and I feel that I could not add anything to what has been said in praise of Dr. Flint. I have known him for many years,—in fact, I made his acquaintance very soon after he came to this city, and have had him in consultation on many occasions. I fully appreciate his wise counsel and his urbanity of manner, and shall never forget his kindness to my son in his last illness.

ADDRESS OF NATHAN BOZEMAN, M. D.,

SURGEON TO THE WOMAN'S HOSPITAL, STATE OF NEW YORK.

Mr. President and Gentlemen:

We all feel the great loss that we have sustained in the death of our departed friend, Dr. Flint. His character, however, has been so well set forth by gentlemen here who are far more capable of doing it than I, that I will not trespass upon your time by further enlarging upon it.

ADDRESS OF REGINALD H. SAYRE, M. D.,

ASSISTANT TO PROFESSOR OF ORTHOPŒDIC SURGERY, BELLEVUE HOSPITAL MEDICAL COLLEGE.

Mr. President and Gentlemen:

Dr. Flint's fame needs no eulogist in me, and I feel that nothing which I could say would add anything of value to that which has already been so appropriately said here this evening.

The following letters were then read by the Secretary, P. Brynberg Porter, M. D.:

From PROFESSOR NATHAN S. DAVIS, M. D., LL.D., OF CHICAGO, *President-Elect of the International Congress.*

65 Randolph Street, Chicago, Ill., April 13, 1886.

P. BRYNBERG PORTER, M. D., *Secretary New York County Medical Association:*

DEAR DOCTOR: Your kind invitation to attend the New York County Medical Association Memorial Meeting on the 19th inst. is received. It would give me a great though sad pleasure to meet with your society, and participate in exercises fittingly commemorative of one who has so long filled the first place in the literature and science of American medi-

cine, and equally the first place in the society organisations of our country, as the late Professor Austin Flint. But the length of the journey, and the number and nature of my engagements, will not permit me to do so. I will only add, that, while in the death of Dr. Flint we have lost the living presence of a *great*, and *good*, and *wise* man, both the present and future generations will continue to profit by the *rich legacy* of his *works*, and the more enduring influence of his *noble example*.

Yours, with great respect,

N. S. Davis.

From E. M. Moore, M. D., *President of the New York State Medical Association.*

Rochester, April 18, 1886.

P. Brynberg Porter, M. D., *Secretary New York County Medical Association.*

Dear Doctor: I received your invitation to be present at the meeting memorial of Dr. Flint, to be held on the 19th inst. It is needless to say how much I regret my inability to be present among the friends of medical science on the occasion, for it is one that marks an era in the history of the medical profession in the state of New York, and, indeed, has a wider space of interest. Dr. Flint lived and moved in an atmosphere of medical science, and would have continued to do so if his years had been prolonged to a century. He suddenly closed his labors, while preparing to cross the ocean to read a paper at the British Association, and making ready a welcome to the whole medical world during the coming year. These facts are known to all, and fill out the measure of a long and laborious life. But of such matters I have little to say. They are of the present time.

My acquaintance with Dr. Flint dates from the period of his early professional life, when the status he was to occupy was still uncertain. But one who came within the charm of intercourse with him was soon made to feel that there was a future for him in the hierarchy of the profession. His first efforts at teaching were made before popular audiences. The manikin of Azoux was then a novelty, and the young teacher was attracted by its beauty, and forthwith essayed to explain it to such audiences as he could gather. For this purpose he went to other towns than the one he lived in. Thus I became his auditor. The great and lucid teacher was yearning for his place. He had not long to wait. The establishment of the medical school in Buffalo, largely by his effort, gave the wished-for opportunity, and satisfied the mental want that pressed upon him. Henceforth we find him laboring in the field that produced the great results upon which we are all so well informed. At this time the habit of tabulating the details of medical observations was far less common than at present. It was but a few years before this that Louis had estab-

lished what may be properly called the statistical school. In the absence of an ascertained law, the statistical table foreshadows it. To this labor the young professor applied himself with assiduity. Then resulted the new and marvellous observations on the well in Erie county, poisoned with typhoid fever secretions. With Dr. Flint's works most medical men are familiar, and I will not dilate upon them.

But the friends of Dr. Flint are not gathered together merely to testify to his medical acquirements and the additions he has made to knowledge. Above all this we see the man, moving among men, without the stain of wrong in his relations to them, as a man or a physician. The difficult *rôle* which this demands—one reaching an ideal standard—is within the reach of a few only. But it was easy for him. He began right, and then the course was the necessity of advancing years. He mourned over the strange defection of the last few years, but the course to be pursued was open to his sight, and he firmly held up the standard which the wavering and the deserters must always respect. Permit me to add this drop to the stream of regard that I know is flowing freely at your gathering.

Very truly yours,

E. M. MOORE.

From E. D. FERGUSON, M. D., *Corresponding and Statistical Secretary of the New York State Medical Association.*

No. 1 Union Place, Troy, N. Y., April 17, 1886.

To P. BRYNBERG PORTER, M. D., *Recording Secretary New York County Medical Association:*

DEAR DOCTOR: It is with deep regret that I find myself unable to attend the meeting of the New York County Medical Association on next Monday evening, when addresses and communications will be made relating to the character of our deceased friend and leader, Dr. Austin Flint.

I know that each one present on that occasion, and the absent multitude who would gladly attend were it possible to do so, will feel that Dr. Flint represented, as nearly as is possible, the perfect man and the complete physician; but I feel that words cannot be placed in descriptive phrase to show the true estimate which our judgment and affections have placed upon him.

My early professional studies brought me into relation with his writings and his lectures; and it was at once apparent to me that he possessed, in the highest degree, the quality of mind suited to an analysis of the complex problems connected with the science of medicine; to separate the essential from the unessential, to recognise the attainable, and avoid the vain struggle for the unattainable; to endeavor to accomplish the practicable without a needless waste of energy on the unpracticable problems of our art.

I have felt and said, and I still believe it to be true, that Dr. Flint did more than any other man of his generation to advance the science of medicine; and this was due more to the methods of study and analysis which he practised and taught than to any direct contribution to what may be called medical discoveries. I say this with a full realisation of the great value of his original work. He taught an army of physicians to investigate cases of disease in a rational manner, and to ascertain the indications for treatment connected therewith. I cheerfully acknowledge my own obligation to him in my professional work, and I believe that the same sense of obligation is shared by thousands of the profession throughout our country, and, in truth, throughout the world.

Dr. Flint's greatest work as a physician did not lie in the new aids he brought to our therapeutical resources, but that he followed methods of investigation, and taught the same to a large number of physicians, whereby error might often be avoided, even when the truth could not be demonstrated. This ability to avoid the errors made strong by tradition is of a higher order than to discover some fact in physical science.

A few years ago circumstances brought me into more intimate relations with him, and I came to know more of those excellent, noble, and lovable traits of character which made him so dear to those who were favored with his intimate acquaintanceship. His gentleness and goodness, his patience with the foibles of others, his desire to avoid the wounding of the feelings of any one however greatly in error he might regard him, his unwillingness to cast an imputation of unworthy motive, were personal characteristics, recognised by all who knew him; and yet there was never a withholding of his own convictions if occasion demanded an expression of his opinion. It was manifest that he had not only achieved the ability to do the right, but that higher plane in which the right alone was in his thoughts.

The influence of Dr. Flint for good will live through generations. He lives for *us* in his works, in his character, in a memory that is blessed, while he himself rests in peace.

Your obedient servant, E. D. Ferguson.

From Joseph C. Hutchison, M. D., *Ex-President of the Fifth District Branch of the New York State Medical Association.*

Brooklyn, N. Y., March 26, 1886.

P. Brynberg Porter, M. D., *Secretary of the New York County Medical Association:*

Dear Doctor: I regret that I cannot attend the memorial services on the 19th inst., in honor of the late Dr. Austin Flint, to which you have kindly invited me, but I cannot repress the desire to comply with your request to send a short communication in reference to his life and services.

I regarded Dr. Flint as the leading physician of the United States, and believe such will be the judgment of history. His efficiency was equal to his reputation, and his reputation was not only exalted, it was real; it was based on achievement, and it was ratified by his brethren here and abroad. He inherited from ancestors, famed in medicine, large abilities, special aptitude for the application of those abilities to their profession and his, and the obligation to live worthy of such a legacy. He increased not only the distinction of his name, but he augmented the value of his calling to mankind. The most searching examination of the facts would justify this statement of his preëminence.

As a man, he was ideally honorable, kind, and gentle. His manner, so courtly, equable, and unassuming, was the interpretation of a noble soul and a great mind, which were refined by large culture gathered by training, study, and travel. I cannot trust myself to refer to him as a friend. The shock and wound of his decease are too recent and too acute for me to say more than that I loved him very much, and miss him more than words can express.

Very truly yours, JOSEPH C. HUTCHISON.

Letters of regret were also received from Dr. J. G. Porteous, of Poughkeepsie, President of the Fifth District Branch of the New York State Medical Association; Dr. William Detmold, Ex-President of the New York County Medical Association; Dr. E. R. Squibb, of Brooklyn; Dr. Thomas F. Rochester, of Buffalo, and a number of others.

MEMORIAL OF THE ERIE COUNTY MEDICAL SOCIETY.

At a special meeting of the Erie (N. Y.) County Medical Society, held March 19, 1886, the following memorial, prepared in response to an invitation to the profession of Buffalo to be represented at the meeting, was adopted:

It would seem most fitting and appropriate that some expression be given by the Society of its sense of the loss sustained by the medical profession in the recent death of our much esteemed former fellow-townsman, Dr. Austin Flint, Sr. Dr. Flint was an honored member of the Erie County Medical Society for many years. It may be truthfully said that he was the first to give a scientific character to its meetings. The death of such a man is felt far and wide. In many parts of Europe his reputation as a scientist and great physician is as well known as in America. The "London Lancet," years ago, uttered but the simple truth, when, in a review of his great work on "The Principles and Practice of Medicine," it said,—"'Tis given to but few men to tread in the footsteps of Austin Flint." Dr. Flint was a resident of Buffalo for twenty-three years,—a member of this Society for eighteen years. He came to Buffalo in 1836,

and became a member of the Erie County Medical Society in 1841. In 1856 he removed to New York city. It is not necessary to speak, at this time, of his worth and of his fame as a great writer and teacher. What student of medicine does not know or has not heard of Dr. Flint? What practising physician, consulting his writings, has not felt that the record before him was stamped with the impression of a great mind, and with the assurance of its fidelity and truth? It has been said that the best evidence of reputation is a man's whole life; and by his whole life may be understood his private as well as his public life, or, in other words, his life as a man and as a physician. To those who had the pleasure and the honor of an intimate acquaintance with him, how admirable was the man! As a host, or presiding at the social board, what grace of manner conjoined with sparkling wit or genial humor! In professional intercourse, or if called in consultation, what could exceed his delicacy of conduct toward his fellow-practitioners! Guided by his Christian principles, he evinced a perfect abnegation of self. Therefore be it the sense of this Society,—

That, while in accord with the sentiment of the profession as to his conspicuous abilities, as an author of world-wide distinction, and as a teacher, impressive and graceful in manner and scholarly and exhaustive in matter, we would, as fellow-practitioners for many years in this city, give special expression to our appreciation of him as an associate in professional labor, at the bedside, and in association discussions. And in those respects it is hazarding little to say, that in the dominion of physical diagnosis of lung and heart affections our deceased friend had no superior, perhaps no equal. He was of that rare type of the medical practitioner, and a gentleman who, by reason of his careful observations, experience, and erudition, his courtesy and consideration toward fellow-workers, especially those yet inexpert, his fascinating manner of conveying his suggestions and advice, his high merit and great modesty of demeanor, with many other excellences, rendered it well-nigh equivalent to a liberal education to be favored with long and intimate fellowship with him. One could not fail to be impressed that in his intercourse with his associates he was actuated by and strove to illustrate the spirit of the injunction "Put yourself in his place," it being another form of the Golden Rule. When a professional character of such exceptional greatness and excellence drops out of our ranks, we do but honor our calling and ourselves in paying tribute to his memory.

James B. Samo.
P. H. Strong.
C. C. Wyckoff.

RESOLUTIONS OF THE ASSOCIATION OF PHYSICIANS OF LOUISVILLE, KY.

The following tribute was received from the profession of Louisville:

At a meeting of the Association of Physicians, Louisville, Ky., the following resolutions on the occasion of the death of Professor Austin Flint were unanimously adopted:

WHEREAS, In the dispensation of Divine Providence, Almighty God has called from his sphere of noble usefulness on this earth our beloved and venerated friend and brother in the medical profession, Professor Austin Flint,—

Resolved, That in Professor Austin Flint we recognise a man of elevated Christian character, of gentle and sympathetic nature, a friend of kind and amiable disposition, who had endeared himself to us by his charming and winning personal attractions.

Resolved, That he was to us the perfect type of the high-minded, conscientious, trained, and most skilful physician, ever ready to benefit mankind by the exercise of his unusual powers, ever cheerfully aiding his medical brethren by his wise counsels.

Resolved, That in him medical science has lost one of her most illustrious contributors, and the medical profession one of its most earnest and devoted members, whose private virtues, scientific career, and public acts ever reflected honor upon this profession, and tended to promote its highest interests and welfare.

Resolved, That as a writer and a teacher we accord to Professor Flint a position inferior to none. Simple and clear, severely truthful, combining great powers of generalisation with remarkable accuracy and attention in detail, his numerous and unrivalled writings on practical medicine have moulded professional opinion in this country and abroad for more than a quarter of a century, and are destined, for many years to come, to exercise a most beneficent influence upon our profession, and to shed glory upon it and on our coutry.

Resolved, That we most sincerely mourn his loss, which we regard as a national calamity, and that we tender our heartfelt sympathy with his family and friends in this bereavement.

Resolved, That a copy of these resolutions be transmitted to the secretary of the memorial meeting to be held in the city of New York on the 19th of April, 1886.

J. A. OCTERLONEY.
T. P. SATTERWHITE.
SAMUEL BRANDEIS.
P. GUNTERMAN.

On motion of Dr. Joseph D. Bryant, seconded by Dr. Lewis A. Sayre, the resolutions read by Dr. Shrady, for the committee, were unanimously adopted.

On motion of Dr. Sayre, it was also ordered that the Proceedings of the Memorial Meeting should be entered in full on the minutes.

CHARLES A. LEALE, *President.*

P. BRYNBERG PORTER, *Recording Secretary.*

The New York County Medical Association was honored by the American Committee on the occasion of the inauguration of the statue of "Liberty enlightening the World," on Bedloe's island, New York harbor, October 28, 1886, and the President, Dr. Charles A. Leale, and the Secretary, Dr. P. Brynberg Porter, received special invitations, and were given seats upon the platform.

ORDER OF EXERCISES.

I. Music during the landing and seating of the assembly.
II. Signal gun.
III. Prayer by Rev. Richard S. Storrs, D. D.
IV. Count Ferdinand de Lesseps, on behalf of the Franco-American Union.
V. Presentation Address, Hon. William M. Evarts.
VI. Unveiling.
VII. Salute: a salvo from all guns in the harbor.
VIII. Music.
IX. Acceptance of the statue by the President of the United States.
X. Representative on behalf of the Republic of France, Le Ministre Plénipotentiaire, et Délégué Extraordinaire, A. Lefaivre.
XI. Music.
XII. Commemorative Address, Hon. Chauncey M. Depew.
XIII. Music, Doxology. Tune, Old Hundred, in which the assembly joined.
XIV. Benediction, Rt. Rev. Henry C. Potter, D. D.
XV. National Salute. Fired simultaneously from all the batteries in the harbor, ashore and afloat.

During the past year, after each meeting, excepting the Flint Memorial Meeting, the New York County Medical Association has furnished a collation to its members and invited guests. These social reunions have been held in the Library room of the New York State Medical Association, in the Carnegie Laboratory, and have been of an exceedingly pleasant and instructive character, the informal conversations enabling those present to universally participate upon subjects of general interest. Exploits of travel, narration of the histories of rare cases, and topics of personal interest relieving the monotony and adding cheer to the one evening of the month devoted to mental and social recreation must prove useful to practitioners, and thereby enable them to more cheerfully benefit their patients and better meet the stern realities of a physician's life.

One or more original papers have been read by the members at each of the stated meetings of the New York County Medical Association held during the past two years. These contributions, without a single exception, have been printed in full by the best medical journals in America, have been largely copied, liberally translated, and extensively commented upon by the medical press throughout the world.

The pathological specimens and the histories of cases related have been at times unique, and always most instructive.

The membership has steadily increased in number, and the Treasurer reports a balance of over four hundred dollars. All bills have been paid as rapidly as audited.

Not a ripple of discord has ever marred the meetings. We have never known of an appeal from the decision of the Chair. We have been governed by a spirit of harmony, showing that zealous, ardent, studious, and ambitious medical men may live in peace and unity, when all recognise the one universal creed, believe in the one ever progressive faith, and freely lay tribute on the one common altar.

CHARLES A. LEALE, *President.*

ANNUAL REPORT OF THE COUNCIL,

AND

MINUTES OF THE SESSIONS OF THE COUNCIL,

FOR THE YEAR 1886.

The Council met in called session at Troy, N. Y., on June 22, 1886.

Present: Dr. E. M. Moore, president; Drs. Clark, Gouley, Hinton, Lyon, Porteous, Van Zandt, and Ferguson.

The Secretary presented the following list of applicants for Fellowship, all of whom were elected:

O. W. Burhyte, H. D. Copely, M. L. Halbert, S. M. Hand, P. A. Hayes, Benjamin Kruyon, W. H. Knapp, Frank Little, Isaac D. Meacham, Edward A. Pierce, G. E. Pierson, Gustavus A. F. Steinfuhrer, Samuel L. Smith, Edward M. Travis, Emily H. Wells, R. H. Ward, Halbert Lyon Krith, George Mortimer Snook, Ludger C. Vincent.

The following were reported as having been appointed by circular vote:

John Pope DeLaney, J. W. Robinson, C. E. Lockwood, Denton W. Rudgers, Benjamin N. Baker, S. J. Walsh, George V. Foster, Samuel H. McIlroy, Joseph Oakley Farrington, O. C. Strong, Herman E. Hayd, B. T. Kneeland, George L. Brown, H. P. Trull, Victor A. Ellsworth, J. G. Wheeler, Joseph Fowler, C. H. Woodward. One imperfect application was ordered returned.

The President and Secretary were directed to issue a circular to the members of the Council and the officers of the District Branches, setting forth the present state of the effort to secure a building for the Library, and soliciting subscriptions therefor.

A verbal preliminary report of the Committee of Arrangements was received and approved, and it was decided to assess each member of the Council fifteen dollars, to defray the expenses of the annual supper.

Adjourned.

E. D. Ferguson, *Secretary.*

[The subjoined circular was issued, in pursuance of the direction of the Council.]

NEW YORK STATE MEDICAL ASSOCIATION.

Troy, N. Y., July 14, 1886.

Dear Doctor: This communication is addressed to the Members of the Council, and the Officers of the *Branch Associations*, and is intended

to again call attention to the effort making to secure a building for our library and meetings.

It is now known to the members of the Association, that from $50,000 to $55,000 has been promised by Dr. Abram Du Bois, on the condition that an additional sum be subscribed sufficient to insure the purchase of a plot of ground and the erection of a building. This will require further subscriptions amounting to $50,000, less about $10,000 already subscribed.

While, if a period of four or five years were allowed in which to complete the subscription, there would be no unusual effort needed to render the undertaking successful, it is uncertain that Dr. Du Bois would be willing to continue his offer for so long a period of time.

The success of the Association is now assured, and rests upon the merits of its declared principles and the method of its organisation. Still, material aid, like the proposed building, is so important and convenient, that the subject should be earnestly considered, and the munificence of Dr. Du Bois appropriately recognised by such giving as is possible by each member of the Association.

Enclosed with this is a copy of the original circular issued by the Building Association, it being the last work done for the profession by our lamented Fellow, Dr. Austin Flint, by whom it was written.

Will you at once endeavor to secure subscriptions to the Building Fund, and notify the Secretary of the Council, at an early date, in relation to the probable amount which will be given by the Fellows residing in your county.

New York county will expect to bear the major portion of the burden in raising the amount required, but it is right that the remaining fifty-nine counties should do a share of the work.

Please give this your earliest possible attention, for whatever is to be done may need to be accomplished by November of this year.

Communications should be addressed to the Secretary of the Council.

By order of the Council:

E. D. Ferguson,
Secretary of the Council.

E. M. Moore,
President.

TO THE FELLOWS OF THE NEW YORK STATE AND THE NEW YORK COUNTY MEDICAL ASSOCIATION.

The Fellows of the New York State Medical Association, since its organisation in 1884, have felt the pressing need of a building for the use of the Association. The library of the Association, although the collection of books was commenced within the past year, now contains over 3,500 volumes, and its present size renders inadequate the temporary accommodations in the Carnegie Laboratory. With ample space, the additions to the library may be expected to continue at a greatly increased rate. There is much need of a building for scientific meetings, for social gatherings, and to serve as a place of resort for reading, study, and other professional work.

The amount of money required for the erection of a suitable building has hitherto seemed an insurmountable obstacle. This obstacle has been removed by the generosity of a distinguished and greatly esteemed Fellow of the State and the County Medical Association. He offers to erect a spacious building, costing about $55,000, provided funds be obtained sufficient to purchase the site for the building. The purpose of this circular is to

appeal to the Fellows of the New York State and the New York County Medical Association to unite in subscriptions for the object just stated. At a meeting recently held of those interested in this object, a Building Association was organised, in order to secure the required subscriptions. It was resolved that the mode of contribution should be the purchase of shares, that each share shall represent the sum of fifty dollars, that the Building Association shall consist of shareholders, and that the property to be acquired shall be owned and managed by the Building Association as thus constituted. At this meeting, several of those present subscribed each for twenty shares, or $1,000. Other subscriptions for this amount and for a less number of shares have since been received, thus furnishing ground for a confident expectation that subscriptions will reach the requisite sum within a short period.

The proposed building will contain an auditorium of sufficient size, together with ample accommodations for the library, and rooms for reading, private meetings, etc. Although situated in the city of New York, the building is by no means designed for the exclusive benefit of Fellows of the State and the County Medical Association residing in the city. It is intended to be a home for non-residents, whenever they may visit the city. The plan includes many of the conveniences of a club-house. As soon as subscriptions for a requisite amount of funds are obtained, the building will be commenced.

Accompanying this circular is a blank form prepared for signatures. Fellows of the New York State and the County Medical Association, and others in sympathy therewith, who may receive this circular, are earnestly solicited to consider the importance of immediate action with reference to the munificent offer of Dr. Abram Du Bois, and to join in obtaining a building which will promote greatly the interests of medicine and of the medical profession in the state of New York.

Subscribers are urged to transmit without delay the blanks with their signatures to the Secretary of the Building Association, Dr. Glover C. Arnold, No. 115 East 30th Street, New York city.

With prompt and liberal contributions, the Association will soon be in possession of a building which will be a source of honorable pride as well as comfort to those who coöperate in this important undertaking.*

AUSTIN FLINT,
Chairman of the Building Association.

GLOVER C. ARNOLD,
Secretary of the Building Association.

The third annual meeting of the Council was held at the Murray Hill Hotel in New York city, Nov. 10, 1886, at 8:30 P. M.

Dr. E. M. Moore, the president, in the chair.

Present: Drs. Arnold, Clark, Colvin, Ferguson, Gillis, Green, Hinton, Hyde, Moore, Porteous, Shrady, Van Zandt, and Wilson.

The Secretary reported six applicants for Fellowship, who had been elected by "circular vote,"—viz., William T. Bull, Guy Reuben Cook, J. B. Ellis, Christopher F. Keefe, and H. C. Sutton.

The following applicants for Fellowship were then elected,—viz., Julius C. Bierwirth, Lucien Damainville, J. W. Gleitzmann, Charles M. Klock,

* Payment for the shares will not be called for until a requisite amount of subscriptions has been received.

Christopher R. McClellan, James R. MacGregor, Henry F. Risch, Arthur V. H. Smyth.

The Secretary presented a communication from J. N. Hegeman, secretary of the College of Pharmacy of the city of New York, conveying an invitation to the Fellows of the Association to visit the college, and inspect the laboratories during the present meeting. The invitation was accepted, and the thanks of the Council directed to be sent to the Board of Trustees for their courtesy.

Biographical notes on Drs. Isaac Griffin Collins, Gaspar Griswold, Desault Guernsey, Frank Hastings Hamilton, John H. Knapp, and Isaac Purdy were then presented, and referred to the Committee on Publications.

A communication from the New York State Pharmaceutical Association relative to the appointment of delegates from this Association to attend the next annual meeting of that Association was then read, and laid upon the table.

The resignation of Dr. C. F. MacDonald was reported by the Secretary.

After a discussion as to the financial demands upon the Association in the publication of the Volume of Transactions, and the expenses connected with the management of the affairs of the Association, it was resolved to make an assessment of two dollars on each Fellow, to be due and payable at this meeting.

Dr. Gouley, as chairman of the Library Committee, then presented the report of that committee as follows (see report of Library Committee).

The report was accepted.

Dr. John Shrady, chairman of the Committee on Publications, reported as follows:

The Committee on Publications have the honor to report that the second volume of the Transactions of the New York State Medical Association was published October 2, 1886, and that the usual number of copies has been distributed to the Fellows, invited guests, and the editors of medical journals. The edition of a thousand copies has been bound, and the account of the expenses will be embodied in the report of the Treasurer. The manual execution of the work, it is hoped, will be as satisfactory to the Association as the high character of the contributions deserves.

While the Committee regret that the issue of the Transactions has been delayed beyond their expectations, and has not by all odds attained the standard of celerity belonging to the first volume, they yet feel that they are not amenable to censure on the score of indifference or indolence. A tardiness in the forwarding of manuscripts, and later on in the return of revised proofs, is responsible for much of the vexation, and to this may be added the minor obstacles due to certain labor movements. The dilatoriness of these contributors likewise reacted upon those whom the Committee were compelled to deny these time-honored privileges.

The Committee have noticed with pleasure the painstaking accuracy of certain contributors, who elected to furnish type-written copies of their

articles. This practice is to be strongly commended as affording welcome facilities to both editor and printer.

JOHN SHRADY, *Chairman.*

On motion, the report was received and accepted.

The Council then adjourned to Wednesday, November 17th, at 8:30 P. M., when it was understood the Treasurer would have his report ready.

E. D. FERGUSON,
Secretary of the Council.

The Council met pursuant to adjournment at the Murray Hill Hotel, in New York city, on Nov. 17, 1886, at 8:30 P. M.

Present: Dr. E. M. Moore, chairman, and Drs. Arnold, Colvin, Ferguson, Gouley, Hinton, Hyde, and Shrady.

Upon report and motion, Drs. Edwin E. Wallace, E. V. Agramonte, Emory A. Didama, and David Mathews were appointed Fellows.

The sum of $200 was directed to be paid to Dr. E. S. F. Arnold, for binding, etc., in the library.

By resolution, it was decided that the signing of an application for Fellowship shall, upon the appointment of the applicant, be considered as a signing of the constitution and by-laws.

The Treasurer's report, showing $290.39 in the General Fund, and $415 in the Building Fund, was received and adopted.

It was resolved that any surplus in the fund for the annual supper be passed to the General Fund of the Association.

The following was moved and adopted:

Be it resolved, That the Council of the New York State Medical Association invite the medical journals, societies, academies, hospitals, and other medical organisations of America and Europe, to exchange Transactions with this Association; and that a copy of this resolution be forwarded to each of the above named organisations, with the request that all communications and exchanges be forwarded to the Library of the New York State Medical Association, 340 East 26th st., New York city.

A proposition from the Journal of the American Medical Association, relative to subscriptions to a proposed Register of the State and County Medical Societies of the United States, was laid upon the table.

The Council then adjourned.

E. D. FERGUSON, *Secretary.*

The Council met in called session at the Murray Hill Hotel, in New York city, on Nov. 18, 1886, at 7 P. M.

Present: Dr. Isaac E. Taylor, chairman, and Drs. Arnold, Avery, Carroll, Clark, Dodge, Ferguson, Gouley, Hinton, and Sharer.

The appointment of delegates to other medical organisations was referred to the President and Secretary, with power.

After full discussion, it was decided to hold the next annual meeting in New York city, beginning on the second Tuesday in October.

On motion, the members of the Council in the Fifth District were constituted the Committee on Publications, with Dr. A. L. Carroll as chairman.

On motion, the members of the Council for the Fifth District were appointed the Committee of Arrangements, with Dr. Charles A. Leale as chairman. Authority to add to their number was given.

Dr. E. F. S. Arnold then resigned as a member of the Council, on account of his removal from the state.

Dr. Glover C. Arnold was elected to fill the vacancy.

Adjourned.

E. D. Ferguson, *Secretary.*

SECOND ANNUAL REPORT OF THE LIBRARY COMMITTEE OF THE NEW YORK STATE MEDICAL ASSOCIATION.

November 16, 1886.

The Library Committee have the honor to present a brief sketch of the work performed during the current year.

During the first year of the existence of the Library three thousand four hundred and forty-eight volumes (3,448) were contributed by Fellows of the Association, and by others interested in the undertaking. From that time the number of volumes has increased to four thousand and twenty-three (4,023).

There is now a carefully prepared triple catalogue of the books contained in the Library,—a card catalogue of authors, a subject catalogue, and a catalogue of the journals,—beside a catalogue of the duplicates.

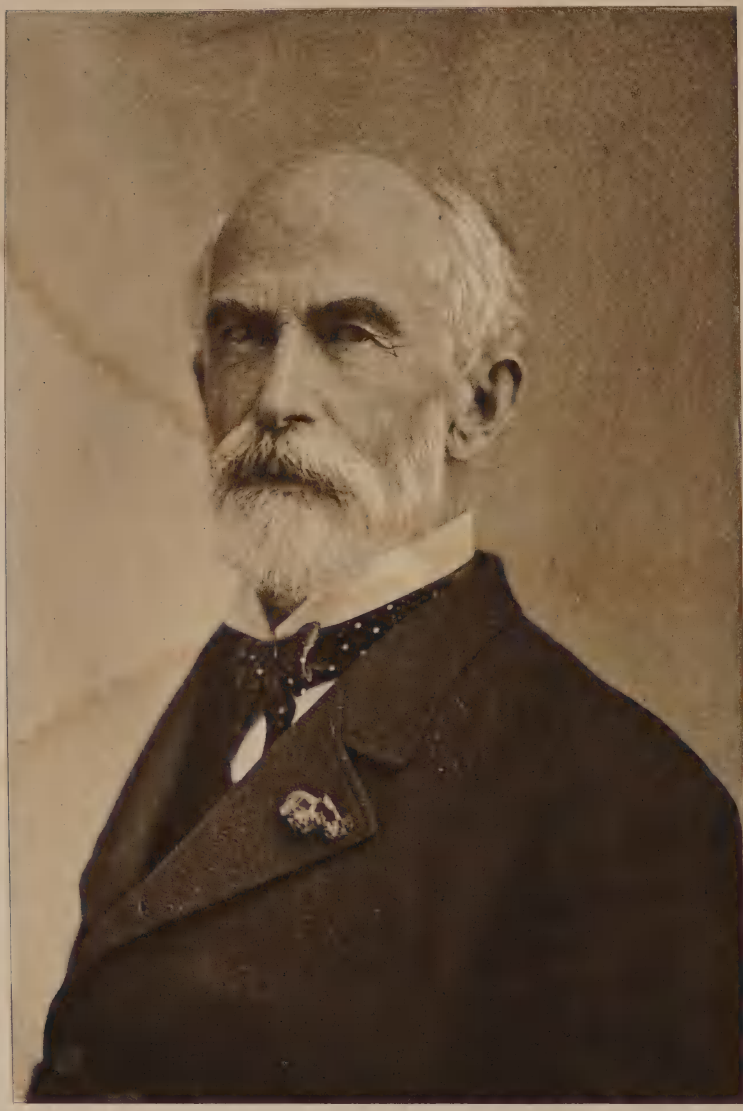
The pamphlets now number over five thousand, and it is impossible without a special appropriation of money to assort and bind them. As soon as possible this valuable collection of the most recent views on the several departments of medicine should be so arranged that it can be used by students of special questions in medicine and surgery.

A binding fund has been privately contributed by a few Fellows of the New York State and County Associations, amounting to one hundred and seventy-four dollars and forty cents ($174.40). This sum has served to defray the expense of binding one hundred and fifty-six volumes.

So far only one fourth of the Fellows of the Association have contributed books to the Library. If the three fourths who have not been heard from will contribute as liberally as the first fourth, it will not be long before our Library will contain at least eight thousand volumes. Their attention is called to the fact that the Library contains two hundred and eighty (280) duplicates for exchange. Exchanges can be effected through the Library Committee.

The committee beg to make their acknowledgments to Dr. E. S. F. Arnold for the completion of the catalogue which he began last year.

J. W. S. Gouley, *Chairman.*



Frank H. Hamilton

EULOGY

ON

FRANK HASTINGS HAMILTON, M.D., LL.D.

BY CHARLES A. LEALE, M.D.

Dr. Frank Hastings Hamilton, one of the Founders of the New York State Medical Association, was born September 10, 1813, and died August 11, 1886. When only three years of age his parents removed from Vermont to New York state, and in this state he received his early education, and has been a teacher of surgery for over half a century. Probably every member of this extensive and prosperous Association can look back with pleasure to the time when he sat listening to the words of wisdom flowing from the lips of Dr. Hamilton, and all who in any way have practised surgery have been benefited by his excellent writings. His defence of the American profession, at a time when its honorable existence was threatened, is now a part of our country's history. His ever constant, unswerving honesty and integrity made him an authority eagerly sought by his *confrères;* willing to accept new theories when valuable, and equally able to denounce erroneous and unscientific, yet fashionable but transitory, practice. His early training made him mighty in the use of language, and powerful with his pen. He has steadily labored for over fifty years in our profession, and has done more than any one to elevate American Surgery. Therefore, as a tribute of love, I take pleasure in placing on record the history of my early preceptor and dear friend, of one who has accomplished so much for the good of his profession and also of his fellow-man. But how has Dr. Hamilton done so much? The answer is easily given when we consider his never-ending studies, which began as a little boy, and only ended at death. The child at the academy, the boy of fourteen years entering college, the graduate in arts at eighteen years, the licentiate to practice medicine and surgery at twenty years, the Doctor of Medicine at twenty-one and a half years, and the Professor of Surgery at twenty-six years, demonstrate a precocity of intellect rarely ending in a long life. Yet Dr. Hamilton continued his labors with unabated zeal beyond the allotted time of the life of man, and after he had passed the three score and ten years he gave to the world some of his most brilliant and valuable thoughts. We

would, therefore, be unjust to his memory, to our Association, and to our successors, if we failed to devote a passing notice to his honored and cherished memory.

The ancestry of Dr. Frank Hastings Hamilton may be traced back to the earliest part of our country's history, for more than two hundred and fifty years, and during all this time appear to have resided in the states of Massachusetts, Vermont, and New York. Dr. Hamilton descended in a direct line from two generations of physicians practising in Massachusetts. His history presents a series of remarkable coincidents. One of his esteemed life-long professional friends, Dr. Austin Flint, Sr., and Dr. Hamilton, taught together for nearly fifty years, ever retained the closest professional relationship, and both of these talented men died in the same year, just as the last editions of their works had been published. The ancestors of Dr. Hamilton settled in Massachusetts in 1634, while those of Dr. Flint settled in Massachusetts in 1638. The grandparents of each were among the first medical practitioners in America, as the Indian was replaced by the white man. Each became the most illustrious in his art, Dr. Flint having been the one to most advance American medicine by his teachings and writings, and Dr. Hamilton the one to most accurately record and elevate surgery during the first century of American Independence.

Frank Hastings Hamilton was born in Wilmington, Vt., where his father owned a farm and a line of stages, or open wagons, which ran between Bennington and Brattleborough, across the mountains, Wilmington being about midway between these two points. The village of Wilmington was then situated on high ground, about two miles from the present village. Not a house of the old village is left. In the year 1816 his parents moved to Schenectady, N. Y. His first instruction was received at a private institution, and he subsequently attended the Lancasterian school, a brick building in the rear of the academy, which building, with the academy, was standing, almost unchanged, when visited by Dr. Hamilton in 1883. Subsequently he entered the academy, taught by the Rev. Ichabod Spencer, who at a later date became a distinguished preacher, and died pastor of a church in Brooklyn, N. Y. Dr. Spencer, while a resident of Schenectady, was a frequent visitor at the house of Dr. Hamilton's father, and an intimate friend of the family. He entered Union college, Schenectady, and was admitted to the Sophomore class in July, 1827, when only fourteen years old,—Rev. Eliphalet Nott, president,—and graduated July 22, 1830. Young Hamilton entered his name as a student of medicine in the office of Dr. John George Morgan, of Auburn, N. Y., April 15, 1830, three months before he had graduated in arts from Union college. At that time Dr. Morgan was the physician to the state prison at Auburn, and was permitted to use the bodies of convicts who had died, for dissection.

He had an office, built for the purpose, in which he gave an annual course of lectures on anatomy.

During the winter of 1831–'32 he attended a course of lectures at the College of Physicians and Surgeons of the Western District of the State of New York, at Fairfield, Herkimer county. The teachers were W. Willoughby, M. D., Professor of Midwifery; James Hadley, M. D., Professor of Chemistry and Materia Medica; James McNaughton, M. D., Professor of Anatomy and Physiology; T. Romeyn Beck, M. D., Professor of Physic and Medical Jurisprudence; and John De La Mater, M. D., Professor of Surgery—all men of great distinction. The class numbered two hundred and one, of whom four graduated. Dr. Hamilton wrote that at that time comparatively few graduated at medical colleges, or took the degree of M. D. Most young men were examined by the county censors, a few by the state censors, thus obtaining a license to practise. Dr. Hamilton, in 1833, received a license to practise medicine and surgery from the Cayuga County Medical Society, and commenced practice in Auburn, N. Y.

Dr. Hamilton, on October 15, 1834, married Mary Virginia McMurran (*née* Van Arsdale), widow of James McMurran, of Shepherdstown, Va. Mrs. Mary V. Hamilton died April 8, 1838, leaving one son, Theodore B., born October 27, 1836. Mrs. Hamilton was the daughter of Isaac Van Arsdale, a Virginia planter, and resided until a short time before her marriage near Shepherdstown, Va., from whence she removed with her parents to Cayuga county, N. Y. In the words of Dr. Hamilton, "Mrs. Hamilton was a woman of refinement, and was possessed of unusual personal attractions. During our brief married life she made many friends, and was to me a loving and kind wife. Her death occurred after a short illness from acute peritonitis."

In 1835 Dr. Hamilton took the degree in medicine at the medical department of the University of Pennsylvania, Philadelphia, Pa. In 1835 he returned to Auburn, N. Y., and commenced teaching by delivering a private course upon anatomy and surgery, in a two-story office which he had expressly built for that purpose, Dr. Morgan having relinquished teaching for the Professorship of Surgery at the Geneva Medical College. In 1839 Dr. Hamilton was appointed Professor of Surgery in the Western College of Physicians and Surgeons of New York, the announcement being made in the annual circular of 1839 as follows:

> Since the close of the last session the vacancy in the Professorship of Surgery has been filled by the appointment of Frank H. Hamilton, M. D., of Auburn, a gentleman every way qualified to discharge the duties of the office. Dr. Hamilton has for several years been distinguished as an able and eloquent teacher of anatomy and surgery; he comes to the institution with the highest testimonials in his favor as a lecturer, and the Trustees are happy to say that his appointment has been made in accordance with the unanimous wish of the other members of the Faculty.

The Trustees therefore feel confident that the duties of the important Chair of Surgery will continue to be ably discharged, and the same unity and harmony, for which the Faculty of this institution has so long been distinguished, will remain unimpaired.

The "Boston Medical and Surgical Journal," of February 27, 1839, also contained the following notice:

The appointment of Dr. F. H. Hamilton, of Auburn, to the Chair of Surgery in the Western College of Physicians and Surgeons, in Fairfield, seems to be very satisfactory to the public. He is a persevering, industrious student, and therefore will succeed anywhere. Men of his power and activity, to say nothing of genius, are very much needed in more than half of the medical schools in the Union. Everything goes by management in these degenerate times. To one person fitted by nature for the station of a lecturer on science—in too many scientific institutions—there are ten stupid-headed drags, who neither elevate themselves nor advance the cause of useful knowledge. It is strange that those who have the care and keeping of the honor of medical seminaries do not open their eyes to the monstrous and glaring iniquity of putting cousins, nephews, and almost aunts, into chairs which it is not possible for them to sustain with dignity or profit to the world. Yet all this is done, to the disgrace of the age, while those most competent are left to grope through life in obscurity. The election of Dr. Hamilton is one of those deviations from the common policy of our medical schools which actually excites our encouragement, for he is a man of rare talents, and in no way played the second fiddle to any of the old orchestra.

At the time that Dr. Hamilton was made Professor of Surgery in the College of Physicians and Surgeons of the Western District of New York he was only twenty-six years of age. He succeeded Prof. Reuben D. Murray, and his colleagues were James Hadley, M. D., Professor of Chemistry and Pharmacy; T. Romeyn Beck, M. D., Professor of Materia Medica and Medical Jurisprudence; James McNaughton, M. D., Professor of Anatomy and Physiology; and John De La Mater, M. D., Professor of Physic and Midwifery,—all of whom were men advanced in years and in reputation, and all were his teachers at the same college in 1831–'32.

On the first of September, 1840, Dr. Hamilton married Mary Gertrude Hart, daughter of Judge Orvis Hart, of Oswego, N. Y., by whom three children were born,—Frank Hastings Hamilton, Jr., Ernest Hamilton, and Minnie Estelle Hamilton. The two former are dead, and the latter, now Mrs. Daniel A. Davis, resided with her father until his decease. She was ever a very affectionate and devoted daughter, and for many years had been a great comfort to her father. Mrs. Hamilton was a lady of unusually rare abilities, and her great assistance to her husband was the cause of much of his fame. Her object in life seemed to be constantly to endeavor to promote his welfare, and to urge him on to increased usefulness and honor. After his death the writer found the following

tribute to her memory, where it had been carefully preserved by Dr. Hamilton. It was from the "New York Tribune," and is as follows:

Mrs. Dr. Frank H. Hamilton died on July 4, 1885. She was of such an unobtrusive disposition that few, even of her most intimate associates, have ever known to what an extent she aided her husband in his literary and scientific labors. Without special technical training, she kept herself familiar not only with her husband's famous cases (and he has had many), but with the literature of the profession, and was his constant adviser and confidant in the preparation of his volumes, as well as his most valuable aid in the work of proof-reading and revising. Not a page of any one of the seven revised editions of his great work on "Fractures and Dislocations" (a book of 1,000 octavo pages), but had the benefit of her suggestions in the manuscript, and her trained eye in the correction of the technical as well as the mere typographical errors; and the same may be said of his "Treatise on Surgery" and on "Military Surgery and Hygiene." It is to her that Dr. Hamilton alludes when, in the preface to the sixth edition of his large work, he makes acknowledgment, as a long delayed tribute of affection and gratitude, to one who has assisted him in the reading of the proof of each successive edition, but who declines to be known to the public except as his dearest friend, companion, and counsellor. During the Civil War she was continually near the scene of action, at Baltimore, Washington, Louisville, or Nashville, that she might be near her husband, who was early appointed medical inspector of our Western armies, and his two sons, who were commissioned officers in the service. Few wives have been a helpmeet in every sense of the word as Mrs. Hamilton. Possessed of a sympathetic nature, literary tastes, and great force of character, she was passionately devoted to her husband, and throughout their married life of forty years they labored together as one.

On August 10, 1840, Dr. Hamilton was made Professor of Surgery in Geneva Medical College; in 1840 he removed to Rochester, N. Y.; in March, 1844, he visited Europe, was absent for seven months, and published accounts of his travels in the first and second volumes of the "Buffalo Medical Journal;" in the spring of 1845 he removed to Buffalo; in 1845 he was appointed surgeon to the Buffalo Hospital of the Sisters of Charity, which position he held until his removal in 1859 to Brooklyn.

August 26, 1846, Dr. Hamilton, with Dr. Austin Flint and Dr. James P. White, organised the Buffalo Medical College, and was appointed to the Chair of Surgery, which position he held until he resigned in 1859. During the interim, in 1846, Dr. Hamilton was Dean of the Faculty, having as his colleagues Dr. Austin Flint, Sr., Dr. White, Dr. Coventry, Dr. Lee, Dr. Webster, and Dr. Hadley, with Dr. Ford, Demonstrator of Anatomy.

In 1858 Dr. Hamilton was appointed Consulting Surgeon to the Buffalo General Hospital; in 1859 he removed to Brooklyn, N. Y., and November 28 of the same year was made Professor of Surgery in the Long Island College Hospital, Brooklyn, which office he accepted after having resigned from his positions in Buffalo. During the same year Dr. Ham

ilton was made surgeon-in-chief to the Long Island College Hospital. April 1, 1860, he removed to New York, and published his first edition on "Fractures and Dislocations." In 1861 he was appointed Professor of Military Surgery and Fractures and Dislocations, and Professor of Clinical Surgery, in the Bellevue Hospital Medical College, which position he held until May, 1868, when, upon the resignation of Prof. James R. Wood, he was made Professor of the Principles and Practice of Surgery, with Operations; also Professor of Clinical Surgery. He resigned March 15, 1875.

At the commencement of the war Dr. Hamilton was appointed surgeon to the 31st N. Y. Vols., in regard to which he wrote that his reasons for accepting this position were as follows: "I had just written a volume on Military Surgery, and was Professor of Military Surgery, etc., in the Bellevue Hospital Medical College. I was about to change my residence to New York, and it would not therefore interrupt my practice. Theodore had gone into the service as a captain; Frank had enlisted, and was on the staff of Col. Pratt; I believed the war would not last but a few months (so Mr. Seward assured me), and I wished to be near my dear children in case they were wounded. In all this my dear wife concurred."

In 1861, July 21, at the first battle of Bull Run, Dr. Hamilton was placed in charge of the General Field Hospital at Centreville; in 1861, August 3, he was made Brigade Surgeon, and ordered to report to Gen. Newton's Brigade, 6th Corps; and in the same year was made Medical Director of Gen. Franklin's Division, near Alexandria. On May 27, 1862, he was made Medical Director of the 4th Corps, on the Chickahominy, by order of Gen. McClellan. September, 1862, he organised and was placed in charge of the United States Hospital in Central Park, New York city; February 9, 1863, he was appointed by the President and Senate Medical Inspector of the United States army, with the rank of lieutenant-colonel; April, 1863, he reported for duty to the Army of the Cumberland, Gen. Rosecrans commanding, with head-quarters at Nashville, Tenn.; April 10, 1863, he was captured by the Confederates, but was released the next day. In 1863 he resigned as Medical Inspector, and returned to New York, after having been in the army two years, four months. His resignation was accepted August 29, and he left Nashville September 10.

Dr. Hamilton has made many original observations, among which are the following:

New method of reducing Dislocations of the Shoulder, Treatise on Fractures and Dislocations, 5th edition, p. 500. Explanation of fulcrum in front of joint after shoulder dislocations, p. 580.

Indian puzzle for Dislocations of Fingers.

First to cut ileo-femoral ligament in Hip-joint Dislocation, p. 730; Resection in Compound Dislocations of the Long Bones, p. 795; Original Observations on Provisional Callus, p. 39.

Method of treating ununited Fractures of the Humerus, p. 252.

Two new signs of Dislocation of the Head of the Humerus, N. Y. Med. Record, March 27, 1875; also on page 252.

Varicocele, Boston Medical and Surgical Journal, vol. 25, p. 153, Oct. 13, 1841;

Keys to the Joints, Richmond and Louisville Medical Journal, Dec., 1868; also in Treatise on Surgery, 2d edition, p. 347.

Rhinoplasty modified by replacing pedicle, Treatise on Surgery, 2d edition, p. 610.

Rhinoplasty from Palm of the Hand; Safe method of cutting sternal portion of the sterno-cleedo-mastoid muscle, p. 697.

Posture in Strangulated Hernia and Colic; read before N. Y. Academy of Medicine; Treatise on Surgery, pp. 724–6.

First to suggest Practice of Closure of large Chronic Ulcers by small tegumentary flaps, by transplantation, Buffalo Medical Journal and New York Medical Journal;—also, see Agnew's Surgery, vol. 1, p. 125; Hamilton's Treatise on Surgery; Gross's Surgery, and Medical Record, Dec. 16, 1872.

First to resect joint for simple Hallux Valgus, New York Med. Record, April 15, 1874; Trans. Am. Med. Assoc., 1878, vol. 29, p. 307.

Criticism of Zuchokande's specimen of Fracture of the Epicondyles of the Humerus, Hosp. Gazette, Sept. 27, 1879, p. 475; also, Treatise on Fractures and Dislocations, last edit.

Is a true Colles' Fracture caused by Avulsion? Reply to Pilcher. Read before N. Y. Surgical Society, Medical Record, 1881; also, Treatise Fract. and Disloc., last edit.

Extirpation of Central Portion of the Thyroid Gland, Med. Record, April 15, 1874.

Posture in the treatment of Ileus and Colic, Hosp. Gazette, 1880; read before N. Y. Academy of Medicine.

"The Saddle" as a remedy for Chronic Cystitis and other chronic inflammations, read before the N. Y. Academy of Medicine, May 20, 1880.

Warm and Hot Water in Surgery, Richmond and Louisville Journal of Med., Jan., 1874; N. Y. Med. Record, May 15, 1874.

A new method of operating for Inverted Toe-nails, Treat. on Surgery, 3d edit.

Original Observations on Bursa Patellæ, N. Y. Med. Record, April 15, 1868; also, in Treat. on Surgery.

Alimentation in Surgical Diseases, read before the New York Academy of medicine; published in the Hospital Gazette, Jan. 15, 1878.

Arsenic in Lympho-Sarcoma, Med. Gazette, 1882.

Primary union in large incised wounds.

Review of the value of Antisepsis, Med. Record, Jan. 2, 1886.

Abdominal Hernia, Strangulated, 73 cases, Bellevue and Charity Hospital Reports, 1870; published by Appleton, pp. 78, octavo.

Esmarch's Bandage, N. Y. Co. Med. Soc., Jan. 8, 1875; pub. in Physician and Pharmacist, May, 1875.

On the question of the possibility of Bony Union of an Intra-Capsular Fracture of the neck of the Femur, read before the New York State Medical Society in 1859, and published in the Transactions of that year; being a reply to Dr. March, of Albany; Report on Dislocations, with especial reference to their results, read before the N. Y. State Med. Soc'y, 1855, pp. 90; published in Transactions.

Ruptures of the Perinæum in Childbirth, read before the New York County Medical Association; published in the Medical Record, June 19, 1885; with a supplement July 4, 1885.

Memorial in honor of the late Professor Austin Flint, M. D., LL. D., read before the New York County Medical Association, April 19, 1886, and published by the Association.

MEDICAL JURISPRUDENCE.

Effects of a sudden loss of consciousness upon the memory of Preceding Events, read before the New York Medico-Legal Society; published in the Sanitarian, Feb., 1876; also, in the Transactions of the Society.

Monomania—a discussion at the N. Y. Medico-Legal Society, 1879, published in the Bulletin of the Medico-Legal Society, Jan., 1880.

Prognosis in Fractures—Our Legal Responsibilities.

Fracture Tables, Buffalo Medical Journal, 1832; Trans. N. Y. S. Med. Soc'y, 1855, 1859; and N. Y. Med. Journal, Aug., 1874, and Oct., 1874.

Prognosis in Fractures of the Patella; Analysis of 127 cases, monograph, Hosp. Gazette, Sept. 6, 1879, Sept. 18, and three subsequent papers in October and November.

Malpractice in Surgery, Medico-Legal Soc'y, March 25, 1875; published in American Psychological Trans., Nov., 1875.

Medical Expert Testimony; Inaugural Address as President of the Society of Medical Jurisprudence and State Medicine, 1884; published (not complete) in Popular Science Monthly, 1885.

Cremation of Human Bodies not a Necessary Sanitary Measure, read before the N. Y. Soc'y Med. Jurisp. and State Med., Feb. 11, 1886, and published in Gaillard's Journal.

SURGICAL INVENTIONS, INSTRUMENTS AND APPARATUS.

1. Bone Drill. See Fract. and Disloc. 5th ed., p. 72
2. Apparatus for broken jaw. " " " 135
3. Gutta Percha as an interdental splint. " " " 125
4. Apparatus for broken clavicle. " " " 207
5. Splint for broken humerus. " " " 244
6. " " elbow. " " " 264
7. " Colles' Fracture. " " " 304
8. " Fracture of Olecranon. " " " 325
9. " Finger, Gutta Percha. " " " 349
10. Apparatus for fracture neck of femur. " " " 390
11. " " shaft of " " " " 453
12. " " " in children. " " 454
13. " " Patella. " " 466
14. " " " " Last edition.
15. " Canvas, movable Gun-shot fracture of Thigh. 514
16. Compound Nelaton Probe. Military Surgery. 183
17. Light Bullet Forceps. 185
18. Strong Bullet Forceps. 186
19. Instruments for Dissection. Treat. on Surgery, 2d edit., p. 211
20. Giant toothed Bone Cutter. " " " 383
21. Improved Bone Forceps. " " " 382
22. Modified Liston's Forceps. " " " 385
23. Wire Gauze Splint for Morbus Cox. " " " 440
24. Apparatus for Double Varus. " " " 459
25. Hare-lip Scissors. " " " 616
26. Modification of Owen's Tonsillotome. " " " 633
27. Method of manipulating the body in Asphyxia from Drowning. " " " 666

CATALOGUE OF BOOKS WRITTEN BY DR. HAMILTON.

1844. Treatise on Strabismus, with 61 cases. Published in Buffalo in 1844.
1860. Treatise on Fractures and Dislocations, octavo, pp. 748. Published by Blanchard & Lea, Philadelphia, 1860.
1863. Second Edition, " " 1863.
1866. Third " Henry C. Lea.
1871. Fourth " " "
1875. Fifth " " "
1880. Sixth " Lea's Son & Co.
1884. Seventh " " "
1877. German " Translated by Rose & Baum. Published by Vanderhoel & Ruprecht, Gottengen, in 1877.
1884. French Edition. Translated by Poinsot, of Bordeaux. Published by Bailliere et Fils, Paris, with notes by Poinsot, pp. 1284.
1861. Treatise on Military Surgery, octavo, pp. 234. Published by Bailliere Bros., New York, 1862.
1865. Second Edition Military Surgery, pp. 648, octavo. Bailliere Bros., N. Y.
1871. Surgical Memoirs of the War of the Rebellion. Collected and published by the United States Sanitary Commission in two volumes. Hurd & Houghton, Cambridge, Mass., Riverside Press, pp. 1166; edited by Dr. F. H. Hamilton, with notes and contributions to the illustrations.
1872. Principles and Practice of Surgery, pp. 943, octavo. Published by William Wood & Co., N. Y., 1872.
1873. Second Edition.
1886. Third Edition.

MONOGRAPHS.

1880. On Fractures of the Patella, a study of 127 cases, pp. 106, octavo. Published by Bermingham & Co., New York.
1882. Health Aphorisms, pp. 64, duodecimo. Published by Bermingham & Co., N. Y., 1882.
1884. Medical Ethics. Published by Bermingham in 1884, octavo, pp. 129.

CATALOGUE OF SURGICAL PAPERS.

1855. Report to American Medical Association on Deformities after Fractures. Published in Transactions for 1855–'56–'57; pp. 482, octavo.
1861. Amussat on Use of Water in Surgery. Translated from the French.

On Hernia.
Varicocele.
Anaplasty.
Fracture of Skull in Children.
Puzzle, or New Instrument for Extension.
Spontaneous Rupture of the Uterus.
Ether in the Reduction of Dislocations.
Enlarged Tonsils.
Ovarian Hernia.
Rhinoplasty.
Blepharoplasty.
Hare-lip.

On Lithotomy.
Epilepsy, trephining for.
Painful Tubercle.
Removal of Lower Jaw.
Shoulder Accidents, etc.

PAPERS ON HYGIENE.

Struggle for Life against Civilisation and Æstheticism; read before N. Y. Academy of Medicine, March 16, 1882; published in Medical Gazette, March, 1882.

Health Aphorisms.

Some additional observations on House Sanitation, Medical Gazette, May 13, 1882.

Sewer Gas, Popular Science Monthly, November, 1882.

Discourse on Hygiene; read before the Auburn Female Seminary by request of the principal, Mrs. Hosmer, May 30, 1838.

Cremation of Human Bodies not a Sanitary Necessity; address before the New York Society of Medical Jurisprudence and State Medicine, published in Gaillard's Medical Journal, April, 1886.

MISCELLANEOUS PAPERS.

Address at Steinway Hall, to create a fund for the erection of a monument at Hartford, Conn., to Dr. Wells, discoverer of the anæsthetic properties of ether; published.

Address at the Academy of Music, Jan. 6, 1871, before the American Institute, on Modern Improvements in Surgery; published in Transactions, 1870–'1, p. 203.

Army Surgeons, Buffalo Med. Journal, Feb., 1866.

Reply to Esmarch's Criticism upon the Treatment of President Garfield's case, Buffalo Medical Press, March, 1886.

Address at the Woman's Hospital Annual Meeting of Board of Trustees, Nov., 1877, published in the annual report.

Address to alumni of Buffalo Medical College, 1877, published in Transactions of Alumni.

Eulogy on T. Romeyn Beck, M. D., LL. D., author of Medical Jurisprudence, being inaugural address as President of the New York State Medical Society in 1856; read before the Society and the Senate, and published by order of the Senate in Transactions State Medical Society.

Annual Address, as President of American Academy of Medicine, on Medical Education; published by order of the Society, and republished in various medical journals.

Address to the graduates of the Buffalo Medical College, Feb., 1859, published in Buffalo Medical Journal, 1859.

Address by request of the faculty at the opening of the term of lectures, Fairfield (N. Y.) Western College of Physicians and Surgeons, Dec., 1839, after having just been appointed by the regents of the University, State of New York, Professor of Surgery in that college. The subject of the discourse was, The History of Surgery in America; published by the faculty.

Introductory Lecture at Bellevue Hospital Medical College, Oct. 12, 1870; published by the class. Subject of address: Medical Education. [Dr. Hamilton subsequently wrote that he had since had occasion to revise the opinions expressed in this address.]

Asiatic Cholera at Suspension Bridge, Niagara Co., N. Y., in July,

1854; read before the New York Academy of Medicine, Nov. 15, 1884; published in N. Y. Medical Journal, Dec., 1884.

Notes on European Tour made in 1844; published in Buffalo Medical Journal, from June, 1845, to May, 1847, 1st and 2d vols., 19 letters, also two preceding letters to Rochester Democrat, August, 1844.

Asiatic Cholera and its Causes; read before the Buffalo Medical Society in 1852, and published in the Buffalo Medical Journal.

Reply to O. S. Fowler on Phrenology, delivered in Rochester, N. Y., 1844, and published by himself.

Address to students, Pittsfield, Mass., 1842.

Medical Ethics, conversation between Drs. Warren and Putnam; a defence of the National Code; published anonymously in the Medical Gazette in 1884, but subsequently enlarged and published by Bermingham & Co., in book form, 1884.

Reply to toast, "The Medical Profession," at first annual reunion of the graduates of Union College in New York, April 27, 1869; published with proceedings of the meeting.

Address to students, Dec. 1, 1840, "Introductory," Geneva Medical College; published by the class.

Lecture delivered by request before a literary society of Toronto, C. W., while he was a resident of Buffalo. Subject: Progress of different Races of Civilisation. The society requested permission to publish, but Dr. Hamilton declined.

Paper on the Voice and Ventriloquism; read before the Auburn Lyceum, about the year 1830; not published.

Paper on Dress, as indicating the Character of the Wearer, Auburn Lyceum.

"Herculaneum and Pompeii;" published in the Western Literary Messenger, Buffalo; edited by Clement.

The Eye, "An Argument;" published by the Literary Messenger, Vol. 14, pp. 24, 1850, Buffalo.

PRESIDING OFFICES HELD BY DR. HAMILTON.

1. 1857. President Erie County Medical Society.
2. 1855. " New York State Medical Society.
3. 1866. " New York Pathological Society.
4. 1868. " Medical Board, Charity Hospital, New York.
5. 1875. " New York Medico-Legal Society.
6. 1876. " " " " Reëlected.
7. 1878. " American Academy of Medicine.
8. 1884. " New York Society of Medical Jurisprudence and State Medicine.
9. 1885. " Reëlected, and in office at time of decease.

HONORARY APPOINTMENTS RECEIVED BY DR. HAMILTON.

1. 1840. Hon. Member, Phi Betta Kappa Society.
2. 1840. Hon. Member, National Historical Society.
3. 1852. Hon. Member, American Medical Society, Paris.
4. 1854. Hon. Member, Connecticut State Medical Society.
5. 1857. Hon. Member, Western Medical Association of New York.
6. 1866. Hon. Member, Memphis Medical Society.
7. 1868. Hon. Associate Member, College of Physicians and Surgeons, Philadelphia
8. 1866. Hon. Member, OÆ Society, Bellevue Hospital Medical College.

9. 1886. Member of the United States Sanitary Commission.
10. 1886. Member of the American Branch of the International Association for the Relief of the Misery of Battle Fields.
11. 1869. Hon. Degree of Doctor of Laws, by the Trustees of Union College, Schenectady, N. Y.
12. 1871. Hon. Member, Yonkers Medical Association.
13. 1880. Hon. Member, New York Surgical Society.
14. 1882. Hon. Member, Retired Permanent Member, N. Y. S. Medical Society.
15. 1883. Hon. Member, N. Y. Medico-Legal Society.
16. 1884. Hon. Member, N. Y. Society Medical Jurisprudence and State Medicine.

HOSPITAL APPOINTMENTS HELD BY DR. HAMILTON.

1845. Buffalo Hospital of Sisters of Charity, from its first establishment, and for several years the only visiting surgeon.
1858. July, was appointed Consulting Surgeon to the Buffalo General Hospital.
1859. Surgeon in Chief to Long Island College Hospital, Brooklyn, N. Y.
1861. Surgeon to Bellevue Hospital, in place of Dr. Willard Parker; held position until resigned, Oct. 5, 1881.
1862. Central Park General Hospital, U. S. Army, appointment made Oct. 7, 1862, by the Surgeon General.
1865. Consulting Surgeon, New York Opthalmic Hospital.
1866. Surgeon to Charity and other hospitals on Blackwell's Island; resigned in 1871.
1868. Consulting Surgeon to Hospital for Ruptured and Cripples.
1868. Surgeon-in-chief, St. Francis Hospital, New York, N. Y.
1868. Consulting Surgeon, Out-door Department, Bellevue Hospital; resigned April 18, 1886.
1877. Consulting Surgeon, Good Samaritan Hospital.
1877. Surgeon-in-chief, City Hall Park and 99th Street Accident Hospitals.
1877. Consulting Surgeon, St. Elizabeth Hospital.
1885. Consulting Surgeon, Bellevue Hospital, New York.

ARMY COMMISSIONS RECEIVED BY DR. HAMILTON.

1834. June 10, Surgeon's Mate, 33d Regt., 4th Brigade, 4th Division of Artillery, State of New York.
1836. Sept. 21, Surgeon to same 33d Regt.
1861. May 21, appointed by Col. Pratt Surgeon to the 31st New York Vols.; examination waived; commissioned May 25.
1861. August 3, made Brigade Surgeon.
1861. Medical Director of Gen. Franklin's Division, near Alexandria.
1862. May 27, made Medical Director of the Fourth Corps on the Chickahominy, by order of Gen. McClellan.
1863. Made Medical Inspector United States Army.

When I first became a private pupil of Professor Frank Hastings Hamilton, nearly twenty-five years ago, it was considered a high honor to be able to look for guidance to such a gifted preceptor. He was then in the full development of his fame as an instructor. His vast experience in

the art of surgery, his knowledge of its literature, and his accuracy in all the details of operations, united with his remarkable frankness for truthful observations, made his word, to his pupils, almost as the law of the "Medes and Persians, which altereth not."

The precepts which fell from his lips were received with that implicit confidence that produced indelible impressions upon the memory. Three evenings of each week he met that little group, now so widely scattered, and with actual demonstrations pointed out the landmarks of anatomy and surgery, and inculcated principles founded upon his own original observations and deductions from his accumulated store of professional knowledge. It was at these half social and half professional meetings that he was wont to pour forth his independent convictions, and unrestrainedly commune with his students.

Dr. Hamilton was one of the most careful and accurate surgical diagnosticians. In cases of gun-shot wounds he taught that placing the patient in the exact position occupied at the moment of the reception of the injury, and knowing from whence the missile came, were of great service in reaching a conclusion as to the tissues through which the ball had passed, its probable course and destination. He was particularly outspoken against the obtrusive and hap-hazard practitioner. When called upon to see a case of fracture or dislocation, all the details were observed most sacredly. He was very careful never to inflict unnecessary pain, and the frequent use of his tape measure, from fixed anatomical point to fixed anatomical point, were lessons never to be forgotten by his pupils. He would never guess, when it could be scientifically reasoned out, and therefore his well trained mind generally arrived at exact conclusions. With all his knowledge, he was never afraid or ashamed to admit a just doubt, but was very positive in what he knew to be right.

In person, Dr. Hamilton was about five feet eight inches in height, and weighed about 140 pounds. He stood erect, even to the last. He had a lofty expansive forehead, denoting high cerebral development. His deep-set, remarkably clear, penetrating eyes never lost their brilliancy, and during animated conversation demonstrated the living spirit within. His nose was large, between the Roman and the Grecian, mouth rather large, with well developed muscles. He had broad cheek bones, and a slightly receding chin. He did not shave, and had a luxuriant full beard and moustache, which he usually kept trimmed to about two inches in length. His hair was wavy, and for a number of years had been of silvery whiteness. In middle age, his hair was of a rich auburn color, and his complexion slightly florid. In dress, he was remarkably neat, and never sacrificed comfort to fashion. His manners were of the most refined, rather cool and reserved to strangers, but open-hearted to trusted friends. He could not conceal his utter abhorrence for the arrogant. His temper was in excellent subjection, and he would often bear in

silence rather than resent; yet no antagonist was too strong to restrain the fury of his pen in what he supposed it to be his duty to vindicate.

Dr. Hamilton had been in feeble health for several years before his death, and a profuse pulmonary hæmorrhage caused him to cease taking his most enjoyable exercise, horseback riding. He had been for several years a person well known among the equestrians of Central Park, and advocated that method of recreation. He was to be seen at all seasons of the year, during the most inclement weather, either in the Park or at the Riding School, and while in the saddle his active mind was most diverted. The last few months of his life were passed in much discomfort, and the loss of his dearly beloved and faithful wife of forty-five years, during the summer of 1885, was never forgotten, and he frequently lived in the past. Yet even then, in all his loneliness, his active brain found solace in inditing his thoughts for publication, as his writings testify, and demonstrated the fire of his brilliant intellect. He sent the last article that he wrote to me, with the request to read it for the New York County Medical Association. It was for the Austin Flint memorial meeting, and is published in full in the Transactions of the Association.

In his last illness, Dr. Hamilton retained the same calm self-possession that he had so often maintained during previous years. He gave his final directions with the clear mind of one knowing that life would soon end. He was thankful that he had been spared to finish the last edition of his work on surgery, and resignedly looked for the time when his labors would cease. Up to the last he had complete mastery over his acute intellect, and when the end came he quietly passed away. His friends met at the impressive burial service, and left with a parting adieu. The remains were interred in his family plot at the ancient historic Sleepy Hollow Cemetery at Tarrytown.

In reviewing the enormous literary labors performed by Dr. Hamilton, we are amazed at their vast extent. A glance at a portion of his library, occupied by his own productions, reveals a succession of octavos, all upon important subjects, bearing the impress of his name. These extraordinary reminders of his ceaseless industry and brilliant talents plainly illustrate the power of his brain, and demonstrate that his knowledge was varied and far reaching; that little escaped his observation; and that each decade of his life presented a succession of literary victories. To the stranger such results may be unexplainable, but not so to those familiar with him and knowing his incessant assiduous system of working, his power over self, his victory over pleasures, his temperance in all things. His life was one of continuous toil, his great pleasures were in his profession. He started in life with definite objects, which he always kept in view. He had an inspiring genius, and he saw the little twinkling star of his youthful ambition develop into a planet of the greatest magnitude; and by his remarkable contributions to medical literature he has been an honor to his country and a benefactor to mankind.

MEMOIR OF THE LATE FRANK HASTINGS HAMILTON, M. D., LL. D.

BY JOSEPH C. HUTCHISON, M. D., BROOKLYN, N. Y.

In the death of Dr. Hamilton, on the 11th day of August last, the profession and this Association have lost one of their most honored members, and one who has left a most distinct impress upon American surgery as a clear thinker and teacher, as an author, as a practitioner, and as a medico-legal expert. He was a practical sanitarian also, and an ingenious deviser of improved methods in the treatment of injuries and deformities.

Frank Hastings Hamilton was born at Wilmington, Vt., in September, 1813. He was graduated in arts from Union college in the class of 1830, and in medicine from the University of Pennsylvania three years later. He was then not more than twenty years of age. He began practice in Auburn, N. Y. He was not long in putting on the harness of a teacher of surgery. He was elected to the chair of surgery at the "Fairfield School," in northern New York, when he was about twenty-five years old: he succeeded the celebrated Prof. Reuben D. Mussey. He next taught surgery during four years at the young school at Geneva. In 1844 he went to Buffalo, and soon joined forces with Drs. Austin Flint and James P. White, in founding the medical college of that city. Here he remained as Professor of Surgery until 1860, when he was called to take the same chair at the Long Island College Hospital. About this time, the war springing up, he entered the service as regimental surgeon; by degrees he achieved promotion, until, in 1863, he was ranked as Medical Inspector. He was a member of the first faculty of the Bellevue Hospital Medical College, in 1861; he continued to hold one of the surgical professorships in that school until 1875. As a teacher he was held in very high esteem. He evinced both culture and force; to dignity of bearing he added affability. In the prime of his fame he had few peers as a popular teacher of surgery.

He was during many years, and until the time of his decease, one of the attending staff of Bellevue Hospital, an institution which had the advantage of many of the devices and expedients which bear his name as their originator.

As an author, Dr. Hamilton was remarkably well equipped. His treatise on "Fractures and Dislocations" has taken its position on the Olympus of the classics of medicine, being one of the first of American writ-

ings to win that place. Seven editions have been printed, and two translations of it in France and Germany. He wrote from time to time minor contributions to the treatment of fractures and to bone-surgery. He was the author of a work on military surgery, and another on the theory and practice of surgery, both of which passed through two or more editions. The latter work, issued in 1872, bears witness to the extent of his attainments and the soundness of his judgment.

As a practitioner, he became best known to the public through his connection with the treatment of the case of the late President Garfield, having been called into the case by the request of the wife of the President.

In the courts of justice Dr. Hamilton was frequently cited as an expert, and he was the means of shedding much light and just views in cases bearing upon the treatment of fractures and upon surgical operations. He was a good witness, and judges have admitted that they have had the law of the case clearly indicated to them by the thoroughness and fairness of his testimony.

When cholera appeared in the New York city institutions in 1866, Dr. Hamilton, then chairman of the Committee of Inspection at Charity Hospital, expressed the belief that the disease could be promptly "stamped out" by the proper use of known sanitary forces. His views were ordered to be put to the test, and he was given full authority to proceed to carry them out. "The violence of the epidemic was speedily quelled, and a multitude of lives were saved." In so doing he opened a new page in the management of pestilential disease.

He thus proved himself equal to every occasion, and he touched nothing that he did not adorn.

With these brief references to a career full of usefulness and honor, this note must close,—while expressing our regrets that thus early we should lose from our ranks so staunch an adherent to the ethical code, and a character so sterling and complete.

The Members of the Council of the New York State Medical Association, while humbly submitting to the decrees of Providence, realise with much grief that the year now closing is made notably sad in the loss, by death, of so many of their Fellows whose labors have largely contributed to the honor, dignity, and usefulness of the Medical Profession.

They now mourn the loss of the second President of the Association, Dr. John Perdue Gray, whose aid, wise counsels, and personal work have been of such signal service.

In common with all the Fellows of the Association, and with the medical profession at large, they sorrow for the death of one who had rendered himself so useful to the State in the guidance of the charitable work in the department of medicine in which he had become a shining light.

The Council therefore resolved that the above be published in the forthcoming volume of the Transactions of the Association, and in the medical journals, and that a copy thereof be transmitted to the family of the deceased.

Done by the Council.

E. D. Ferguson, *Secretary.*

December, 1886.

MEMOIR OF JOHN P. GRAY, A. M., M. D., LL. D.

BY JUDSON B. ANDREWS, M. D.

The New York State Medical Association is thus early in its history called to mourn the loss of one of its most honored Fellows, and one whom it had elevated to the highest position in its gift.

John Perdue Gray was elected President of the Association at its second annual meeting, in November, 1884, and presided at the session of 1885. His death occurred on the 29th of November, 1886, after a final illness of about two weeks.

It is fitting that we should put on record a short history of his life and estimate of his character. Dr. Gray was one of a family of nine children, and was born on the 6th of August, 1825, at Half Moon, Centre county, Pa. He received his education in the Bellefonte academy and at Dickinson college; he was graduated in medicine from the University of Pennsylvania in the class of 1848, and subsequently served a term of two years in the Pennsylvania Hospital. Several of his classmates sought service in the army and navy: but this was not to his liking. During his hospital life he exhibited such ability and qualifications as led to his being invited to accept the position of assistant physician to the Utica asylum. He entered upon duty as third assistant in 1850. Passing quickly through the higher positions of second and first assistant, he was appointed superintendent in July, 1854, to fill the vacancy caused by the resignation of Dr. N. D. Benedict. Prior to this he had been elected superintendent of the new asylum at Kalamazoo, Michigan, for the building of which he had prepared the plans. He resigned the latter office, and thus at the early age of twenty-nine he was placed in a most responsible position, at the head of the largest institution for the care of the insane in the United States. His subsequent career showed the wisdom of the managers in selecting him to fill the place which had been occupied by the renowned Dr. Brigham, whose skill and ability had already made the Utica asylum famous among kindred institutions. This reputation he not only sustained, but widely extended, by improving the old, and by originating new and improved, methods of administration and treatment. Accepting unreservedly the theory that insanity is a physical disease and the insane sick people, he gave his attention to the medical treatment in its broad sense. His highest aim was to make the asylum the best type of a hospital. He was the first to introduce in an asylum for the insane

Thos. P. Gray

the method of heating by steam, and of forced ventilation by use of a large revolving fan,—a system which has since been almost universally adopted by the asylums of the country.

He organised the various departments upon the plan of responsibility of subordinates to a single head, and of these in turn to the superintendent as the highest authority. This brought order and discipline, and increased the power and efficiency of management. The organisation of the Utica asylum, as perfected by him, has served as a model for most of the like institutions subsequently established.

The first improvement in the condition of the insane was attained by removing the violent, destructive class from the strong rooms in which they had been confined, and bringing them out into the light and cheerful surroundings of the wards. Many were released from restraint, given the benefit of exercise in the open air, and brought together at the table under proper supervision. This enlarged freedom and greater personal care, from an increase in the number of attendants, effected a marked change for the better in their condition.

Soon after assuming the superintendency, Dr. Gray became the editor of the "Journal of Insanity," which was for some time the only regular publication upon the subject in any language. Under his charge the "Journal" became a recognised authority upon psychological matters, and by his writings in it, and in the annual reports of the asylum, he was most widely known in this country and abroad. The thirty-two volumes of the "Journal" edited by him constitute an enduring monument to his memory, while the record in the reports of the methods employed for the occupation, amusement, and moral treatment of patients, which are to-day heralded as steps of progress, are a strong tribute to his thoughtful, practical mind, and disclose the advanced ground which he occupied.

In the field of medical jurisprudence, Dr. Gray achieved some of the greatest triumphs of his life. His course would be fairly marked out by an enumeration of the most important trials in the state for the past thirty years in which insanity has been made a plea. There are few, if any, counties in the state in which he has not appeared as a witness,—sometimes in behalf of the prosecution, and sometimes of the defence. He was often appointed a commissioner by the various governors in cases of an appeal for executive clemency. His testimony was always true to his convictions of right, and carried with it the force of an authority. He resorted to no subterfuges, clothed no theories in the garb of science, to extenuate or excuse crime. He yielded to no popular clamor, but always took his position and sustained it upon principles deduced from his broad knowledge and extensive experience. No exception to his testimony was ever made the ground of appeal to a higher court. The amount of labor he was called upon and often compelled to do against his earnest desire furnishes the best evidence of the value placed upon

his services. Upon his conduct of the Guiteau case, in which he was the principal medical witness for the prosecution, may rest his reputation as the leading expert on insanity in this country. His testimony is a model of terse logic, of strong statement, of clear exposition of principles and facts of science, incontrovertible and convincing in its conclusions, a fit culmination of his labor in this field.

Dr. Gray was a successful lecturer upon insanity, and for some years held the chair of Psychological Medicine and Medical Jurisprudence in the Albany and Bellevue Medical Colleges. These lectures were undertaken not so much for his own honor or emolument, as for the advancement of the medical profession. He believed that the specialty should be recognised in the curriculum of our medical colleges, and that its importance demanded that instruction should be given to the rising generation of medical men. His lectures were noted for their clearness and definiteness of statement, and for the eloquence and grace of their delivery. They attracted a large circle of hearers, not only among students, but among practitioners of medicine. Their success gave him the keenest pleasure, and furnished another evidence of the versatility of his great power.

Dr. Gray was a controlling spirit in lunacy matters in the state. He was one of the commissioners for the location of the criminal asylum at Auburn; of the Willard and Buffalo asylums, for the latter of which he furnished the plans and was one of the board of managers until it was fully organised and in successful operation. He was an influential factor in framing the present lunacy statutes of the state, which are generally acknowledged to be the most simple in operation, and to furnish better protection to the insane than those of any other state, surpassing in some important particulars those of England, upon which they were in part modelled. His advice was sought and highly valued by boards and individuals interested in public charities throughout the land.

The medical profession has shown its appreciation of Dr. Gray by the positions of honor it has conferred upon him. He was an ex-president of the Oneida County Medical Society, of the State Medical Society, of the State Medical Association, of the Association of Superintendents of American Institutions for the Insane, of the Association of Medical Editors, of the Psychological Section of the International Medical Congress of 1876, and at the time of his death held the same position in the Ninth International Medical Congress. He was an honorary member of the British Psychological Association, of the Société Medico-Psychologique of Paris, and of the Societa Freniatrica of Italy. He also held the honorary degree of LL. D. conferred by Hamilton college.

We have only spoken of the public life of Dr. Gray, that by which he was known to the world. To his friends there is an inner life in which he is not less great, but only the more loved and respected. As a citizen,

the daily journals have given the true estimate in which he was held, in stating that at the time of his death he was the most eminent citizen of Utica.

He was the most affectionate of husbands and the most indulgent of fathers; he was the kind physician and sympathizing friend in affliction, firm in the performance of duty, but gentle as a woman in his ministrations. His extensive knowledge of men and affairs, his superior judgment, his readiness of decision, made him an able adviser; and his opinions were often sought and as freely given, not only in professional but in business matters. He endeared himself to men in every walk of life, and his death is mourned as that of a friend and benefactor in many a home made happy by the return of some loved one "clothed and in his right mind."

The distinguishing characteristics of the man were his comprehensive knowledge, his broad views, his retentive memory, his originality, his independence, his persistency, his power to attract and convince, his affability of manner and kindness of heart. He dared do what he thought was right, and, sustained by his conviction of duty, he was always ready to meet the consequences of his opinions and acts. Though, like other men in high public positions, he met with opposition and criticism of his management of affairs, no breath of suspicion rested upon his integrity or uprightness of character.

We cannot attempt to describe all the qualities which made up the man. His abilities, his virtues, and his deeds were great, while his imperfections were but the patent of his humanity. In looking over his life work, there is a richness of labor and a fulness of success which call forth our admiration; and the highest commendation we can utter is, that the profession, the community, and the world are the better for the life he lived.

MEMOIR OF DR. ISAAC PURDY.

BY T. W. BENNETT, M. D., OF SULLIVAN COUNTY.

The life of Dr. Isaac Purdy, a Fellow of this Association, was brought to a sudden end, unexpected by his family, at his home in Mongaup Valley, Sullivan county, N. Y., on the 6th day of December, 1885. He was esteemed as an eminent and leading physician in the county in which he successfully practised his profession for thirty-five years. His death was untimely, as his demise occurred at the comparatively early age of 57.

In his personal and mental characteristics, Dr. Purdy was what may be aptly termed an "old-time" physician. He did not exhibit the suave and courtly polish of the metropolitan practitioner, but he was endowed with all the true instincts of the gentleman. He was quiet and unobtrusive, and stood in the relation of friend and companion to his patients. In his intercourse with his professional brethren, he was always true to the teachings of the "Code;" and when called in consultation by the younger members of our profession, he was always ready to respond promptly with the advice and counsel of his riper years.

In the application of his therapeutics, Dr. Purdy availed himself altogether of the accumulated wealth of the U. S. Pharmacopœia, in which he found all that was necessary to his purpose as a practitioner. He was firmly opposed to the use of any of the innumerable "new remedies," so called, which are so industriously thrust upon the notice of the physician of the present day with appeals for his patronage and countenance. In personal appearance he was compact, robust, and strong. He had always enjoyed good health, and possessed in an eminent degree the physical power of endurance, qualities which are essential to the country doctor to enable him to perform well and faithfully the arduous duties of his calling.

Dr. Purdy was a strictly moral man, temperate in his life and studious in his habit, his mind being well stored with the scientific progress made in the healing art. He was a devoted lover of his family and home. He had a large and extended practice, and notwithstanding his busy life in its pursuit, he found time to engage actively in the affairs of the County Medical Society, of which he was a most efficient member, taking a lively part in all its scientific work and discussions, and always exhibiting great interest in its advancement and success. He was its president in 1869.

Dr. Purdy was born in Wallkill, Orange county, N. Y., May 22, 1828.

After finishing his preliminary education here, he commenced the study of medicine under the preceptorship of Dr. Perkins, of Barryville, and was graduated from Castleton college, Vermont, receiving his diploma therefrom in 1851. In his younger days he taught school at Barryville; but this occupation he was forced to relinquish, as his patients increased in numbers, and he soon established a practice which he retained up to the time of his death.

Dr. Purdy was well known throughout the county of Sullivan, where he had so long lived, an honor to himself and to the profession which he represented; and the sincere regrets heard on all sides from the many friends and acquaintances he had formed afford a sure index of the love and esteem in which he was held.

He leaves a widow and two children,—one, a son, grown to manhood, who is following his father's profession at West Town, Orange county.

MEMOIR OF DR. DESAULT GUERNSEY.

BY GEORGE H. CODDING, M. D., OF DUTCHESS COUNTY.

The subject of this brief sketch, Dr. DESAULT GUERNSEY, was born in the town of Milan, Dutchess County, New York, June 13, 1830, and died at Amenia, New York, December 9, 1885, his age being consequently 55 years, 5 months, and 26 days.

At an early age he removed to the city of New York with his father, Dr. Peter B. Guernsey, who for many years was a prominent physician of that city. He was educated and fitted for college at the grammar school of the New York University, but for some reason did not take a full classical course, but entered upon the study of medicine in the office of his father and that of the late Dr. Willard Parker, attending lectures at the College of Physicians and Surgeons, from which institution he was graduated in the year 1850.

Dr. Guernsey passed the examination for his degree successfully some months before attaining his majority, and was appointed to duty at Bellevue Hospital, serving eighteen months in the surgical department. Shortly after the expiration of his term of service at Bellevue he received the appointment of assistant physician to the Marine Hospital, Quarantine, where, after serving about one year, his health became seriously impaired by an attack of typhus fever, which left its mark upon him for a long time, and it is a question if he ever fully recovered from its effects. Dr. Guernsey himself, when alluding to this sickness, was wont to say, "It was fully seven years before I felt like myself again after the typhus, and before I had fully recovered I had an attack of typhoid, which added two years to my convalescence."

This sickness and the long and tedious recovery made a radical change in Dr. Guernsey's plans and prospects. I have heard him say that at the time of his graduation in medicine it was his ambition to begin way down the ladder, and work his way up to a professorship in either medicine or surgery. No one acquainted with him in after years, and knowing of his untiring energy and perseverance in whatever he undertook' could doubt for a moment that his life in such a capacity would have been eminently successful, and a help and blessing to all who chanced to hear and know him.

Fail was a word most foreign to his nature, and whatever work claimed his attention was performed with untiring zeal and close application until

success crowned his efforts. After recovering in a measure from his sickness, and seeing full well that life in the city, for some time, at least, was out of the question, he cast about in his mind for a place in the country where he could enter upon the practice of his profession, and try in this way to regain his former health and vigor. Having this end in view, he located at Pine Plains, Dutchess county, and continued there in the practice of medicine until 1862, when he gave up his practice, and entering the army served as volunteer surgeon with General McClellan during the memorable conflict of Antietam.

In this year, 1862, he was appointed surgeon to the 174th Regiment, New York State Volunteers, by Governor Morgan. He went with his regiment to New Orleans, in the Banks expedition, and served with it up to the attack on Port Hudson, when he received a severe injury from the fall of his horse, causing a fracture of the right tibia, which incapacitated him from further service. Returning North, he changed his residence to Amenia, New York, where, in the fall of 1861, he had married Lydia A., daughter of Joseph Reynolds, Esq., one of the foremost citizens of that place, and where he continued in active practice to the time of his death. One child, a son, was born to them, who is now a senior at Columbia, and who recently attained his majority. Dr. Guernsey's widow survives him.

He joined the Dutchess County Medical Society in 1866, and from his first connection with it took an active part in all its undertakings, and was ever closely identified with its best interests. He was its Vice-President during the years 1867, '68, '69, '70, '77, and '78, and President during 1879 and 1880. He was chosen a delegate to the State Society in 1871, and was elected a permanent member in 1876. He was also a member of the American Medical Association. It may safely be said that no member of the county society was held in greater esteem, or whose counsel was more sought or more highly prized.

Too well known to be mentioned here was the stand he took in the state society on the so-called "code question," and, when patience ceased to be a virtue, he was quick to identify himself with those who sought to "guard the faith," and to stand fast for the honor of the profession he loved so well.

In the practice of his profession Dr. Guernsey was a man greatly beloved by all, old and young, rich and poor, alike. His genial smile and hearty manner were often of more value to his patient than drugs; and I have seen a patient smile and try to take his outstretched hand when the friends thought he had been unconscious for hours. He seemed to know by instinct what was in a patient's mind, and to act accordingly; and in this in a great measure appeared to lie the secret of his hold upon them. Said to me a lady of education and refinement, who had been a patient of his for nearly twenty years continuously, "I think why Dr. Guernsey

and I have gotten on so well together all these years is, that he seems to know just how I feel and what I want without troubling me to ask." This was not strictly true, for no physician was more careful to thoroughly understand his patient before prescribing than he, but his way of gaining knowledge was so different from what they expected, that he would be in possession of all the essential facts and they not realise that he had been questioning them about anything in particular. Those patients who knew him best loved him most.

As a business man he had few superiors. It was a common remark in Amenia that he had business enough for two persons outside of his profession,—but no matter how much he undertook, none of the interests with which he was connected suffered from neglect; he alone was the sufferer in not allowing himself sufficient time for the rest and recreation which nature demanded. He was president of the First National Bank of Amenia, a position he had held for a number of years prior to his death, and the success of this institution was largely due to the confidence reposed in him individually, for he was a man who never lent his name to any enterprise without being fully in sympathy with all it promised to do. Several times I have known of his refusing to join in undertakings where he was not sure of ultimate success, for the sole reason that others might be induced to join because Dr. Guernsey had done so. "Am I my brother's keeper?" was a question he never asked; and his daily life showed full well that to do for and to others as he would have them do to him was a sentiment ever uppermost in his thoughts. When any new financial scheme was broached to the people of Amenia, the first question always asked was, "What does Dr. Guernsey think of it?" and any enterprise he felt he could conscientiously enter into never lacked supporters. Wherever he was known, his word was as quickly taken as his bond.

He was honest—honest in thought, word, and deed. If anything, he was more than honest, in always preferring to do better than he agreed rather than less. Above all, he was honest in his profession: no charlatanism with his patients, no sneaking ways of undermining a fellow-physician or detracting from his skill and standing. He would say nothing of another physician if he could not speak in praise. From personal experience I know whereof I have affirmed. For three years Dr. Guernsey and myself were associated together in the practice of medicine, and not one word of written contract did we have to bind us to an agreement; but, as I have previously remarked, he never forgot what he had once said. No bond could have bound any one more closely to an agreement than Dr. Guernsey felt bound by word of mouth; and when we made our arrangements no one was present but ourselves. I had simply his word of honor, and that was enough.

It is a sad and yet in many respects a pleasant duty to speak of the home life of Dr. Guernsey. He had added to and beautified the old

homestead inherited by his wife from her parents, making it one of the finest residences in eastern Dutchess. No man could have been more mindful of the welfare of his family than he, kind, careful, affectionate; where their interests were at stake, no selfish or personal feelings were allowed to intrude themselves; no sacrifice was too great to give them pleasure. He was ever on the alert, not alone to shield them from harm and unpleasant associations, but to provide liberally for their enjoyment and pleasure. In his home, whatever he thought was for the best was accepted as such unreservedly, and his judgment was rarely found at fault.

Dr. Guernsey was not a member of any church, although a regular attendant upon divine worship and a liberal contributor to the support of the gospel. He reverenced religion, and although not given to much speaking upon the great question of what lies beyond the "portal we call death," the words he now and then let drop showed full well that the cause of his not speaking was not for lack of thought upon the subject. An intimate friend of his and of his family, who was at one time the pastor of the church they attended, said to me, "I considered Dr. Guernsey a kind of outside deacon, and in anything I wished to accomplish he was the first one consulted." Nothing could better illustrate the position he held in relation to nearly everything connected with both church and state, as it affected the interests of his town and village.

For the last two or three years of his life his health had not been good, although able for the most part to be up and about his usual business. He suffered at times excruciating pain from facial neuralgia, and also from severe attacks of lumbago, but was always patient, and bore his sufferings uncomplainingly. The last time he was absent from home was to attend the annual meeting of this Association in November last. Returning home on Friday, the last day of the session, he appeared in his usual health, although somewhat fatigued; on Saturday evening he had a return of his old trouble, rheumatism, and suffered much for a day or two, but was then apparently better; on the following Friday, just one week after his return from the annual meeting, he was again prostrated with intense suffering, and never again left his room.

The disease which terminated his life was aneurism of the aorta. Whether he ever suspected its existence will never be known. One thing is certain, he never, in speaking of himself, called his trouble anything but rheumatism or neuralgia. Had he known of this disease, which at last proved fatal, I doubt if he would ever have mentioned it, preferring to suffer in silence rather than cause the constant anxiety which the knowledge of the existence of such a disease would have brought to those he loved. As long as consciousness remained he had always a smile for his family, his physicians, and his attendants. Not one murmur escaped his lips.

Allow me to close this imperfect sketch of a noble man with the words of a friend of Dr. Guernsey who had been associated with him as an officer in the bank for more than twenty years, and who at his funeral, in closing his tribute to his worth as a man, friend, and associate, said,— "Family, wife, child, bitterly and long will miss the loving head, and yet 'he was Thine, O God.' Thou hast taken but Thine own. Thy will, Thy will be done. For us old friends, tried and true, naught remains to be said but this: Clear head, tender heart, true friend, loving brother because God's child, for a little while, a little while, farewell."

MEMOIR OF ISAAC GRIFFIN COLLINS, M. D.

BY NATHANIEL C. HUSTED, M. D.

Isaac Griffin Collins, A. B., M. D., was the son of Japhet W. Collins, and died at his home in Sing Sing, December 18, 1885, being 53 years of age. He was born in Greenville, Greene county, New York. After obtaining the usual common-school education in his native place, his father sent him to the Claverack Institute for the purpose of fitting him for college. He entered the sophomore class at Union college, at Schenectady, under the presidency of the venerable Dr. Nott. After graduating from this institution he entered the office of Dr. Mosher, of Coeymans, and afterwards matriculated at the Albany Medical College, where he attended the lectures of the late Alden March, Armsby, McNaughton, and other pioneers of the profession at Albany. He graduated in the spring of 1858, receiving the degree of M. D., and then went to Coxsackie, where he associated himself with Dr. Knapp. After two years he dissolved this partnership and went to practise for himself, remaining in this place five years. He then concluded to try the city of New York, where, however, he only remained six months. From thence he removed to Sing Sing, Westchester county, in 1865, where he found an opening just suited to his taste. But before leaving Coxsackie he married Frances L., daughter of David B. Smith, Esq., of Port Byron, who now survives him with two sons, one of whom was educated as a physician, and is now occupying his father's home and practice.

Dr. Collins was a great reader and hard student. He was very fond of natural history, especially of zoölogy. He was benevolent to the extent of his means. His integrity and excellence of character his neighboring physicians all attest. He was not a member of the church, but believed in its doctrines, and contributed liberally to its maintenance.

Dr. Collins had a strong hold upon his patients, who virtually idolized him, recognising in him a just and conscientious physician. Dr. Collins was never ambitious for office in medical societies, but was elected once or more President of the Westchester County Medical Society, was physician to Sing Sing Prison, and previously coroner of Greene county, where he had formerly lived. He was a member of the New York State Medical Society, of the American Medical Association, of the New York State Medical Association, and of the Westchester County Medical Society.

Dr. Collins's death had a very depressing effect upon many homes in his community, which through long years has confidently looked to his skill and knowledge as its refuge in times of sickness and distress. He was always kind of heart, hopeful, generous, genial, and outspoken, firm in his convictions, and tolerant of the opinions of others. Acquaintance with him invariably resulted in friendship, and to those who knew him best his loss is the passing away forever of a name upon that list of cherished friends, which to the mature of age ever grows less as the years go by. Dr. Collins having lived so long in Sing Sing seemed to many almost a guardian angel; they viewed him as one of themselves; sympathy united him to them; he acquired new ties, new affections; he mourned with them, and his philosophy pointed out new sources of consolation. He has poured into the hearts of many afflicted families the oil of comfort, he has soothed the pangs of woe, he has mitigated distress. Now

"Closed are those eyes in endless night,
No more to beam with fond delight,
Or with affection roll.
Eternal silence seals that tongue,
Where sense and soft persuasion hung,
To captivate the soul."

MEMOIR OF DR. PATRICK HENRY FLOOD.

BY CHARLES W. BROWN, M. D., OF CHEMUNG CO.

Patrick Henry Flood was born in Northampton county, Pa., March 14, 1814. His father, John Flood, was a native of Ireland, and came to this country when only a young man. He had five sons and three daughters, of whom the subject of this sketch was the oldest. Until he was sixteen years of age, Dr. Flood spent his time at home. He received his preliminary education at Bloomsburg and Danville academy, Pa., and for some two years and a half was clerk in a general merchandise store at Danville, Columbia county, Pa. In the year 1840 he entered the office of Dr. Bonham Gearhart, of Washingtonville, Pa., and began the study of medicine, where he remained for two years, and subsequently entered Geneva Medical College, N. Y., graduating M. D. from that institution in the year 1845, and settled in the practice of his profession at Lodi, Seneca county, N. Y., where he remained continuously in practice for some twelve years, when he came to Elmira, where he has since resided, continuing the practice of medicine. Dr. Flood, during his residence in Seneca county, was a member of the Seneca County Medical Society, and also a member of the Erie County Medical Society, and was elected one of the curators of the University of Buffalo, which position he held up to the time of his death, which occurred March 12, 1886. Since his residence at Elmira he has been a member of the Chemung County Medical Society and the Elmira Academy of Medicine. He has twice been elected mayor of the city of Elmira, twice coroner of the county of Chemung, a member of the board of education one term, also a member of the board of health of the city. He was an ardent supporter and original Fellow of this Association.

In 1862 Dr. Flood responded to his country's call as surgeon of the 107th Regiment New York Volunteers, ranking as Major, and in the same year was made Brigade Surgeon of the 12th Army Corps, 1st Division, subsequently ranking as brevet Lieutenant-Colonel for meritorious services, and in April, 1865, was assigned to duty as Surgeon in charge of the 1st Division Hospital, which position he held until the close of the war. To give a complete history of his career as physician and surgeon of the army would be to trace his regiment and brigade through the various battles of Antietam, Chancellorsville, Gettysburg, Sherman's March to the Sea, Resaca, Dallas, Kenesaw Mountain, Pine Ridge, Peach-Tree Creek, Averysboro', Bentonville, and Atlanta.

Since his return from military service, Dr. Flood remained in the quiet practice of his profession in Elmira, zealously supporting all interests tending to educate and elevate the rising generation. He was a man free from ostentation, active, industrious, ardent, and possessing that integrity of purpose worthy of emulation by the young.

In the year 1837 he married Rachel, daughter of John Schmeck, of Paradise, Northumberland county, Pa. She was born in the year 1820. By this union there have been born four sons, three of whom were practising physicians, the only survivors being Dr. Henry, and Thomas S., of Elmira, the latter a druggist and member of Congress.

MEMOIR OF DR. GASPAR GRISWOLD.

BY WM. H. FLINT, M.D., OF NEW YORK.

The untimely death of Dr. Gaspar Griswold has deprived the community of a most useful member, who, though young in years, was old in wisdom, and was exceptionally well equipped with both theoretical and practical knowledge for the successful practice of his profession.

Dr. Griswold's physical development was unusually complete, and his mental powers were commensurate with his bodily strength. He possessed keen insight and deep penetration. His remarkable powers of quick and accurate observation endowed him with excellent diagnostic ability; his calm confidence rendered him a hopeful prognosticator; and his selection of curative agencies was guided by sterling sense combined with accurate information regarding the most recent advances in therapeutical art. Dr. Griswold's unselfish devotion to professional duty, and to the best interests of his patients, made these his staunch friends and his enthusiastic eulogists. His originality in thought and investigation had already borne worthy fruits, and had given bright promises of a harvest still more abundant and mature. Some of Dr. Griswold's dominant characteristics were manly self-reliance, indomitable energy, remarkable perseverance, rare generosity, genuine courtesy, and perfect loyalty to his friends. He scorned everything savoring of charlatanry and deceit, was intolerant of baseless pretensions, and impatient of ignorance, bigotry, and ostentation. His aims were high, his aspirations noble, and his purposes beneficent.

Dr. Griswold inclined toward that true conservatism which is tenacious of established principles, but quick to avail itself of really useful innovations. His writings bear the stamp of genius, and are characterized by grace, comprehensiveness, and perspicuity. Dr. Griswold's life and death seem eminently calculated to impress upon us two valuable lessons: The brilliant results which attended his professional efforts offer great encouragement to faithful and persistent labor, while his sudden decease teaches us how uncertain a tenure the strongest has upon life, and how necessary is economy of even unusual physical powers. All who knew Dr. Griswold will feel that the loss of one so highly endowed with the best gifts of nature, of science, and of art is well-nigh irreparable, while those bound to him by the ties of affection will ever reverence his noble character, and unceasingly cherish sweet memories of their departed friend.

MEMOIR OF DR. JOHN H. KNAPP.

BY H. O. JEWETT, M. D., CORTLAND, NEW YORK.

Dr. JOHN H. KNAPP was born in New Fairfield, Conn., in 1819. His early years were spent as a farmer's boy, laboring on the farm in summer and attending a common school during the winter months, till his parents removed with him to Sherburne, N. Y., where he received a good academical education. After teaching school several terms for the purpose of procuring means to defray the expenses of his professional course, he commenced the study of medicine in the spring of 1839 with Drs. White and Lyman, of Sherburne.

In 1842–'43 he attended lectures at the Albany Medical College, and began practice at Marathon, in the spring of 1843. In 1845 he removed to Ætna, N. Y., and thence to Harford, Cortland county, in 1848, where he soon gained an extensive and lucrative practice, and where he continued his professional labors up to the time of his death.

Dr. Knapp possessed a good physique, a vigorous constitution, a strong will, and an active mind. From the observation of more than forty years, in a practice so situated that we were often in consultation, and as often crossing each other's borders, the writer feels justified in saying that, as a practitioner, Dr. Knapp had few superiors. He was thorough, energetic, independent in thought and action, and prompt in meeting emergencies; yet he was cautious, discriminating, and shrewd in diagnosis. Naturally conservative, he never relinquished his partiality for blood-letting in the treatment of inflammatory affections, yet he was sufficiently conversant with the literature of his profession to enable him to cull therefrom the most valuable practical hints, readily appreciating and adopting newly discovered and improved methods of treatment. At the bedside his kindness and sympathy, combined with an air of calm self-assurance, seldom failed to win confidence and inspire hope.

Popular and adroit as an accoucheur, he commanded a large obstetrical practice, in which, as well as in the ordinary surgery of a country practice, he was peculiarly successful. His judgment was rarely appealed from, and if he called counsel it was for the benefit of his patient and not merely to fortify his own position.

Frank in announcing his own, he was tolerant of the adverse opinions of others. His antagonism was without acrimony, hence his competitors were not his enemies. Viewing humanity in its fairest light, he looked

over and above those petty jealousies which disturb the peace of smaller minds. While he despised fraud and quackery, he shed no tears on account of their prevalence. True to the requirements of his calling, true to his convictions of right and wrong, and true to his associates both in and out of the profession, he ministered alike to the sufferings of the rich and the poor, and did his duty well.

As a citizen Dr. Knapp was unostentatious, upright, and liberal. Possessing the social qualities in an eminent degree, his genial temperament made him a general favorite. Aside from his popularity as a physician, Dr. Knapp enjoyed a fair share of public and political favor. He discharged the duties of school inspector for a number of years, represented his town in the board of supervisors five times, held the office of postmaster six years, and was reappointed to the same office a short time prior to his death. He was elected to and served one term (1857) in the state legislature. In 1862 he was appointed examining surgeon of recruits for the army, and held that position till the close of the war. In these several capacities he acquitted himself with signal honor and ability. He was for many years connected with the Cortland County Medical Society, and was several times its president. He was also an original Fellow of the New York State Medical Association, in which he took great pride and interest, punctually attending all its meetings and zealously supporting its principles.

After an unusually busy season, involving fatigue and exposure which had severely taxed his energies, he was, on the 22d of April, 1886, seized with a severe chill, succeeded by an attack of acute nephritis, which terminated his life on the morning of April 30, 1886. Thus in the flush of his usefulness, in the vigor of ripened manhood, and while his faculties were yet bright and clear, passed to his rest the upright man and the good physician.

DECEASED FELLOWS.

Name.	County.	Age.	Date of Death.	Place of Birth.	Medical College.	Year of graduation
Adams, John G.	New York Co.	77	June 19, 1884.	New York City	Coll. Phys. and Surg., N. Y.	1830
Ayres, Alexander	Montgomery Co.	74	Aug. 27, 1886.	Oppenheim, N. Y.	Castleton, Vermont.	1842
Church, Allen S.	New York Co.	62	Oct. 24, 1884.	Great Barrington, Mass.	Castleton, Vermont.	1848
Coit, William N.	Clinton Co.	52	Aug. 4, 1886.	Plattsburgh, N. Y.	University of Pennsylvania.	1856
Collins, Isaac G.	Westchester Co.	53	Dec. 18, 1885.	Granville, N. Y.	Albany Med. Coll.	1858
Cornell, F. O.	Montgomery Co.	29	Dec. 3, 1884.	Glenville, N. Y.	Albany Med. Coll.	1880
Cotes, J. R.	Genesee Co.	54	Mar. 20, 1884.	Batavia, N. Y.	Med. Dep. Univ. Buffalo.	1852
Davidson, John	Queens Co.	91	Dec. 26, 1884.	New York City	Lic. N. Y. St. Med. Soc.	1829
Flint, Austin	New York Co.	73	Mar. 13, 1886.	Petersham, Mass.	Harvard Med. Coll.	1833
Flood, Patrick Henry	Chemung Co.	72	Mar. 12, 1886.	Pennsylvania.	Geneva Medical Coll.	1845
Gay, Charles C. F.	Erie Co.	66	Mar. 27, 1886.	Pittsfield, Mass.	Berkshire Med. Coll.	1846
Gray, John Perdue	Oneida Co.	61	Nov. 29, 1886.	Half Moon, Pa.	University of Penn.	1849
Griswold, Gaspar	New York Co.	29	Mar. 4, 1886.	New York City	Bellevue Hosp. Med. Col.	1878
Guernsey, Desault	Dutchess Co.	55	Dec. 9, 1885.	Wilton, N. Y.	Coll. Phys. and Surg., N. Y.	1850
Hall, John E.	Albany Co.	38	Nov. 3, 1886.	New Marlboro', Mass.	Albany Med. Coll.	1877
Hamilton, Frank H.	New York Co.	73	Aug. 11, 1886.	Wilmington, Vt.	University of Pennsylvania.	1835
Knapp, John H.	Cortland Co.	67	April 30, 1886.	New Fairfield, Conn.	Chenango Co. (N. Y.) Med. Soc. Geneva Med. Coll.	1843 1861
Lauer, Eugene	New York Co.	40	Oct. 3, 1886.	Germany.	Giessen and Marburg.	1868
McClellan, Christopher R.	Kings Co.	73	Jan. 13, 1887.	Maryland.	University of Maryland.	1835
Moore, Joseph W.	Albany Co.	47	Sept. 9, 1886.	Troy, N. Y.	Castleton, Vermont.	1859
Pask, William	Erie Co.	55	Aug. 24, 1884.	England.	Med. Dept. Univ. of Buffalo.	1884
Peck, M. R.	Warren Co.	62	April 4, 1884.	Sand Lake, N. Y.	Albany Med. Coll.	1851
Purdy, Isaac	Sullivan Co.	57	Dec. 6, 1885.	Wallkill, N. Y.	Castleton, Vermont.	1851
Slack, Henry	Dutchess Co.	57	Dec. 10, 1886.	Albany.	Albany Med. Coll.	1852
Slocum, J. O.	Onondaga Co.	65	Mar. 3, 1885.	Pompey, N. Y.	Castleton, Vermont.	1846
Stevens, Frederick P.	New York Co.	31	Dec. 4, 1884.	Ithaca, N. Y.	Bellevue Hosp. Med. Coll.	1877

CONSTITUTION.

ARTICLE I.

SECTION 1. This Association shall be called THE NEW YORK STATE MEDICAL ASSOCIATION.

SEC. 2. The objects of the Association shall be,—

First. The cultivation and advancement of the Science of Medicine.

Second. The promotion of public health.

Third. The maintenance of the honor and character of the Medical Profession.

Fourth. The establishment and furtherance of cordial professional relations and fellowship between the Medical Profession of the State of New York and the Profession of other States of the United States and of foreign Countries, through the Medical Associations and Societies of such States and Countries.

ARTICLE II.

SECTION 1. For the purposes of this Association, the State shall be divided into five geographical districts, to be called, respectively, the 1st, or Northern District; the 2d, or Eastern District; the 3d, or Central District; the 4th, or Western District; and the 5th, or Southern District.

These districts shall comprise the sixty counties of the State, arranged as follows:

First, or Northern District.

Franklin, Fulton, Hamilton, Herkimer, Jefferson, Lewis, Montgomery, Oneida, Oswego, St. Lawrence.

Second, or Eastern District.

Albany, Clinton, Columbia, Essex, Greene, Rensselaer, Saratoga, Schenectady, Schoharie, Warren, Washington.

Third, or Central District.

Broome, Cayuga, Chemung, Chenango, Cortland, Delaware, Madison, Onondaga, Otsego, Schuyler, Seneca, Tioga, Tompkins.

Fourth, or Western District.

Alleghany, Cattaraugus, Chautauqua, Erie, Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Steuben, Wayne, Wyoming, Yates.

Fifth, or Southern District.

Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester.

SEC. 2. This Association shall be composed of Fellows, who are regular practitioners of medicine or regular graduates in medicine, residing in the State of New York.

SEC. 3. All physicians in the State of New York who are in good standing, and who subscribe to the code of ethics of this Association, may become Fellows, upon paying the initiation fee and signing the Constitution and By-Laws; provided that each candidate for fellowship shall make a formal application therefor, and that this application shall have been approved in writing by one or more members of the Council from the district in which such candidate resides. The candidate's application shall then be transmitted, through the Corresponding Secretary, to the Council for final action.

SEC. 4. Fellows of the Association who participated in the foundation of the same, at the Convention held in the city of Albany on February 4th and 6th, 1884, shall be classified as Founders, and shall be so indicated in all lists of Fellows.

SEC. 5. Fellows of the Association, who have qualified or shall have qualified as such at or previous to the first regular meeting of the Association in November, 1884, shall be classified as Original Fellows, and shall be so indicated in all lists of Fellows.

SEC. 6. The Presidents for the time being of all County or District Associations or Societies, such Associations or Societies being in affiliation with this Association, upon payment of the annual dues and assessments, shall be regarded as Fellows. Such Fellows shall be classified as Delegates, and shall be so indicated in all lists of Fellows.

SEC. 7. All County and District Associations or Societies in affiliation with this Association shall be entitled to representation in this Association by their Presidents for the time being acting as delegates; provided that such Associations or Societies shall pay the annual dues and assessments of such delegates, who shall not be required to pay initiation fees.

SEC. 8. In addition to the ordinary Fellows of the Association, the Council, with the consent of the Association, may appoint, at any annual meeting, Honorary Fellows; provided that such Honorary Fellows shall have been nominated at the annual meeting immediately preceding by three Fellows. Such Honorary Fellows must be regular physicians, not residents of the State of New York, who have been long eminent in the profession, and not more than five Honorary Fellows shall be appointed at any annual meeting. The total number of Honorary Fellows shall be limited to fifty.

SEC. 9. The Council, with the consent of the Association, may appoint,

at any annual meeting, Corresponding Fellows; provided that such Corresponding Fellows shall have been nominated at the annual meeting immediately preceding by three Fellows. Such Corresponding Fellows must be regular physicians of distinction, not residents of the State of New York, who are actively engaged in the cultivation of medical science, and not more than five Corresponding Fellows shall be appointed at any annual meeting. The total number of Corresponding Fellows shall be limited to fifty.

Sec. 10. Honorary Fellows and Corresponding Fellows shall have all the privileges of ordinary Fellows, except that they shall not be eligible to any office in the Association, and shall not have the right to vote in the meetings of the Association. They shall not be required to pay any initiation fees, dues, or assessments.

ARTICLE III.

Section 1. The titular officers of the Association shall be a President and four Vice-Presidents (one of these five officers to come from each of the five districts), a Secretary, a Treasurer, and a Director of the Library. In addition, there shall be elected two Fellows from each district, and one Fellow shall be appointed at large by the President-elect, who, with the titular officers, shall together constitute the Council of the Association.

Sec. 2. The President and the Vice-Presidents shall be elected for the term of one year. The elected members of the Council shall serve each for the term of two years. The Secretary, Treasurer, and Director of the Library shall each be elected for the term of three years. The member of the Council appointed at large by the President-elect shall serve for the term of one year.

Sec. 3. The President-elect shall, with the consent of the Association, appoint each year, to serve during his term of office, such standing committees as may, in his judgment, be necessary to properly carry out the objects of the Association.

ARTICLE IV.

Section 1. This Constitution shall go into effect at the annual meeting of the Association in November, 1884.

ARTICLE V.

Section 1. No part of this Constitution shall be abolished, altered, or amended, and no addition shall be made thereto, except at a regular meeting of the Association, after due notice of such alterations or additions shall have been given in writing by a Fellow at the regular meeting immediately preceding, and then only by a vote of three fourths of the Fellows present and voting.

BY-LAWS.

ARTICLE I.

MEETINGS AND NOMINATIONS.

SECTION 1. The Association shall hold regular meetings, one in each year, at such time and place as shall be designated by the Council, each meeting to continue for at least three days.

SEC. 2. During the morning session of the first day of each regular meeting, a Nominating Committee shall be constituted, composed of two representatives from each district, to be appointed by the Fellows from the respective districts present at the meeting, and one member appointed at large by the President, who shall present, for approval and adoption by the Association, a full list of officers and members of the Council to be elected.

SEC. 3. In case the list, or any part of the list, of nominees presented by the Nominating Committee be not approved and adopted by the Association, the Nominating Committee shall present new nominees for such offices as may remain unfilled, and shall continue so to do until all the officers of the Association and members of the Council shall be chosen.

SEC. 4. The officers of the Association and members of the Council, at the expiration of their respective terms of office, shall, without delay, deliver up and transfer to their successors all moneys, books, manuscripts, vouchers, and other property of the Association, which may be in their possession, and shall take receipts therefor.

SEC. 5. The Nominating Committee shall be discharged when all the officers of the Association and members of the Council to be elected have been chosen by the Association.

ARTICLE II.

DUTIES OF OFFICERS.

SECTION 1. The President shall preside at all meetings of the Association and of the Council, shall preserve order at such meetings, shall have the power to adjourn the meetings should they become disorderly, and shall appoint all special committees not otherwise ordered by resolution.

SEC. 2. One of the Vice-Presidents, at the request of the President, or in the President's absence, the Vice-President selected by the Vice-Presidents present at the meeting, shall temporarily perform the duties of the President. In case of the death, disability, or resignation of the President, one of the Vice-Presidents shall be elected as acting President by the Council, and shall perform the duties of the President until the next annual election of officers.

SEC. 3. The Secretary shall make and preserve accurate minutes of the meetings of the Association, and shall perform the usual duties pertaining to the office of Secretary. He shall conduct the official correspondence of the Association, shall preserve all such correspondence, including copies of official letters written by him, and shall act as Secretary of the Council. He shall also notify each Fellow of his appointment to Fellowship, and shall furnish him with an official certificate of such appointment in the following form:

CERTIFICATE OF FELLOWSHIP OF THE NEW YORK STATE MEDICAL ASSOCIATION.

This is to certify that. . . . . .is a Fellow, in good standing, of THE NEW YORK STATE MEDICAL ASSOCIATION, having been duly appointed on the. . . . . .day of. . . . . , 18. . . .

. . . . . .
President.

. . . . . .
Secretary.

[L. S.]

ENDORSEMENTS.

The person mentioned in this certificate has this day resigned his fellowship, and has thereby relinquished all right and title to any share in the property of the Association.

. . . . . .
Secretary.

Dated on the. . . . . .day of. . . . . , 18. . . .

The person mentioned in this certificate has this day been received again into full fellowship in the Association.

. . . . . .
Secretary.

Dated on the. . . . . .day of. . . . . , 18. . . .

SEC. 4. The Treasurer shall receive all moneys paid to the Association in any way and from any source, and shall dispose of the same as directed by the Council. He shall make a report to the Council of the condition of the finances of the Association, whenever directed so to do by the Council, and shall make a full and complete report of the finances to the Association at each regular meeting.

SEC. 5. The Director of the Library shall have charge of the Library, under the direction of the Council, and he shall be Chairman of the Library Committee.

The Council may appoint a Librarian, with such duties as may be found expedient, said Librarian to be under the direction of the Director of the Library.

SEC. 6. The Secretary, Treasurer, and Director of the Library shall together constitute a Committee of Registration for the regular meetings of the Association, whose duty it shall be to provide, for the registration of Fellows, a proper book, which shall be kept open during the day immediately preceding each meeting and during the days of the said meeting. Any one or two members of this Committee shall be competent to act in the absence of the other members or member. Any Fellow may register for a meeting on payment of his dues and assessments for said meeting, or on presentation of the Treasurer's receipt therefor, or if it shall appear from the books of the Treasurer that his dues and assessments have been paid; provided always that all back dues and assessments have been paid in full. No Fellow whose dues and assessments have not been paid in full shall be entitled to participate in any way in the proceedings of the Association, nor shall he be a candidate for any office in the Association or for membership in the Council. The ayes and nays, when demanded on any question, shall always be called from the official register of the meeting. Each Fellow registering shall do so personally and with his own hand; and, in so doing, he pledges himself in honor to adhere to and support the Constitution and By-Laws of the Association, including its code of ethics.

SEC. 7. For all legal purposes, the President and the four Vice-Presidents shall constitute and shall be regarded as the Board of Trustees of the Association.

ARTICLE III.

DUTIES OF THE COUNCIL.

SECTION 1. The Council shall hold an annual meeting at some convenient time and place, to be determined by the President and Secretaries, not more than thirty days before each regular meeting of the Association, and shall also hold such meetings during the regular meetings of the Association as may be necessary for the transaction of its business. The Council shall also hold, during the year, such other meetings as may be necessary. The President shall call a special meeting of the Council when requested in writing so to do by five members thereof, the request specifying the object of such meeting.

SEC. 2. Seven members of the Council shall constitute a quorum.

SEC. 3. In case at any time, except during the meetings of the Associa-

tion, it shall be impracticable to hold a meeting of the Council, questions may be determined by written votes of the members of the Council; provided always that the question or questions to be determined shall have been presented in writing or printing, and in identical language, to each and every member of the Council.

SEC. 4. Before the adjournment of each regular meeting of the Association, the Council-elect shall fix the time and place of the next meeting of the Association, and shall appoint, subject to the approval of the Association, a committee of five Fellows, to be known as the Committee of Arrangements, whose duty it shall be to make suitable arrangements for such meeting.

SEC. 5. The President and Secretary shall be *ex-officio* members of the Committee of Arrangements.

SEC. 6. The President and Secretary, assisted by the Committee of Arrangements, shall provide for papers to be read and discussions to be held at the meetings of the Association.

SEC. 7. The Council shall report to the Association, at each regular meeting, the names of all Fellows admitted during the year immediately preceding such meeting, and the names of all Fellows who have resigned or have been dropped from the list of Fellows.

SEC. 8. The Council shall authorise and direct all deposits and investments of the funds of the Association, shall order all expenditures to be made by the Treasurer, and shall audit the accounts of the Treasurer, so as to report upon the same at each annual meeting of the Association. The funds of the Association shall not be invested except in bonds of the United States or of the State of New York, or on first mortgages on improved real estate in the State of New York, such mortgage or mortgages not to exceed one half of the adjudged value of such real estate.

SEC. 9. The Council shall take cognisance of any and all apparently flagrant violations by a Fellow or Fellows of the code of ethics of the Association, and shall act upon all charges brought by a Fellow or Fellows against another Fellow or other Fellows, as provided for in the section relating to "Ethics and Discipline."

SEC. 10. The Council shall fill all vacancies in the offices of the Association, and the officers so appointed shall serve until the next succeeding annual election; and the Council shall, in the same manner, fill all vacancies that may occur in the number of its members who have been elected by the Association.

SEC. 11. The Council shall embody in their annual report a statement of the investments and of the condition of the funds of the Association.

SEC. 12. The Council shall take charge of all the real and personal property now or at any future time in the possession of the Association.

SEC. 13. At each regular meeting of the Association, the Secretary of the Council shall read, as part of the annual report of the Council, its minutes for the year.

SEC. 14. The Council shall manage the affairs of the Association, except as otherwise provided in the Constitution and By-Laws, and shall appoint from its own number or from the list of Fellows such committees as may, in the judgment of the Council, be necessary for the transaction of its business.

ARTICLE IV.

APPOINTMENT, RESIGNATION, AND REINSTATEMENT OF FELLOWS.

SECTION 1. All applications for fellowship shall be made in accordance with Section 3 of Article II of the Constitution.

SEC. 2. A Fellow removing from the state or desiring to resign his fellowship shall send to the Secretary his resignation in writing, by which act he severs his connection with the Association. If the dues and assessments of the Fellow resigning be paid in full to the date of his resignation, the Secretary shall, at the request of such Fellow, endorse upon his certificate of fellowship the fact and date of the resignation, and shall return the certificate so endorsed to the Fellow, who shall then be considered as having formally resigned from the Association and as having relinquished all right and title to any share in the property of the Association.

SEC. 3. No Fellow shall be permitted to resign while his dues and assessments, or any part thereof, remain unpaid, or while he is under charges which may lead to his expulsion, unless he be allowed to resign by special resolution of the Association.

SEC. 4. Each and every resignation shall be reported by the Council at the next succeeding regular meeting of the Association.

SEC. 5. An application for reinstatement to fellowship in the Association shall be submitted to and considered by the Council in the same manner as an original application for fellowship; except that, on the presentation of a duly authenticated certificate of former fellowship, together with satisfactory evidence of good professional standing during the time following the resignation of former fellowship, payment of the initiation fee shall not be required when the former Fellow is reinstated. In case of the reinstatement of a former Fellow, the Secretary shall endorse upon the certificate of former fellowship the fact and date of such reinstatement.

SEC. 6. No former Fellow who has been expelled, or who has been dropped from the list of Fellows for non-payment of dues or assessments, can be reinstated according to the provisions of Section 5 of this Article; but such former Fellow may be appointed according to the provisions of the Constitution, on payment of his initiation fee, if his back dues and assessments be paid in full up to the date when his previous fellowship had ceased.

ARTICLE V.

ETHICS AND DISCIPLINE.

SECTION 1. The Code of Ethics of the American Medical Association shall be the Code of Ethics of this Association, and shall form an integral part of these By-Laws.

SEC. 2. The only kind and degree of discipline of Fellows, except the dropping of names from the list of Fellows for non-payment of dues and assessments, shall be expulsion from the Association.

SEC. 3. All charges against a Fellow or Fellows shall be received by the Council and transmitted forthwith to the County or District Association or Society in affiliation with this Association in which the accused Fellow or Fellows may hold membership, asking for a report by such Association or Society upon such charges. In case the Council shall be officially notified, by any County or District Association or Society in affiliation with this Association, of the expulsion from such Association or Society of a member or members who are also Fellows of this Association, such member or members shall be expelled from this Association.

SEC. 4. The Council shall hear all complaints against a Fellow or Fellows of violation of its Code of Ethics, in case such Fellow or Fellows do not hold membership in any Association or Society in affiliation with this Association, or in case a charge or charges have been referred to the Council by an Association or Society in affiliation with this Association. In such cases, the Council shall notify to appear before them any and every Fellow against whom a charge or charges have been preferred. With the said notification to appear before them, they shall furnish to the accused Fellow a copy of the charge or charges made against him. They shall also notify the accusing Fellow or Fellows to be present with the Fellow against whom the charge or charges have been made, when the said charge or charges shall be carefully investigated. The Council shall decide upon the said charge or charges at as early a day as practicable, and shall report their decision to the Association at the regular morning session next succeeding the day on which their decision shall have been made. In case the accused or accusing Fellows, or both, be not present at the time appointed for the investigation, the Council may, at their pleasure, either adjourn the investigation once, and once only, for a period not longer than one month, or they may decide upon the charge or charges at the time first appointed for the investigation, and report their decision to the Association; provided always that the accused Fellow shall be entitled to one such adjournment upon his personal or written application for the same to the Council.

SEC. 5. The Council shall investigate all apparently flagrant violations of medical ethics by a Fellow, such as improper publications, that come to their knowledge, or are brought to their notice in any way. They

shall investigate such apparent violations in the same manner as provided for in Section 4 of this Article, except that it shall not be necessary that any formal charge or charges be made by a Fellow.

SEC. 6. A charge against a Fellow shall be made in writing, signed by the Fellow or Fellows making the charge, enclosed in a sealed envelope, endorsed "Charges against a Fellow," and shall be sent to the Secretary, to be by him presented to the Council at its next meeting.

SEC. 7. A Fellow can be expelled only at a regular meeting of the Association, upon the recommendation of such action by the Council, and then by an affirmative vote of a majority of the Fellows present and voting.

ARTICLE VI.

INITIATION FEE, DUES, AND ASSESSMENTS.

SECTION 1. The initiation fee shall be five dollars, and the annual dues for each current year, payable at or before each regular meeting, shall be three dollars.

SEC. 2. The Council may, at its discretion, make an assessment or assessments upon Fellows, such assessment or assessments not to exceed two dollars for each Fellow for any one current year.

SEC. 3. The Treasurer shall send by mail to the usual address of each Fellow, within one month of each regular meeting of the Association, a notification that his current dues and assessments are payable at or before the time of such meeting, and shall enclose, with such notification, a bill for such dues and assessments and for all arrears of dues and assessments.

SEC. 4. The names of all Fellows who shall have failed to pay their dues and assessments for three consecutive years shall be dropped from the list of Fellows; and, within one month of the time when the dues and assessments for the third year shall become payable, the Treasurer shall notify Fellows in arrears for two consecutive years that the provisions of this section will be enforced against them unless payment of such arrears be made before the adjournment of the next regular meeting of the Association.

ARTICLE VII.

PUBLICATIONS.

SECTION 1. Each and every Fellow shall be entitled to receive one printed copy of the Constitution and By-Laws of the Association, and at least one such copy shall be sent to the American Medical Association and to each and every Association or Society in affiliation with this Association.

SEC. 2. The Council, or a sub-committee thereof appointed by the Coun-

cil, to be known as the Committee on Publications, shall have full charge of all publications by the Association, with power to determine what scientific papers, communications, and discussions shall appear in the printed Transactions of the Association.

Sec. 3. No paper that has appeared in any other publication prior to being read at a meeting of the Association, shall be printed as a part of the Transactions of the Association.

Sec. 4. All papers and communications presented or read at a regular meeting of the Association shall be the property of the Association, and shall not be published except by permission of the Council or of the Committee on Publications.

ARTICLE VIII.

DELEGATES TO OTHER MEDICAL ASSOCIATIONS AND SOCIETIES.

Section 1. All delegates to other Medical Associations or Societies shall be appointed at the proper time and for the proper period by the Council, and the Council shall fill all vacancies in the number of such delegates.

Sec. 2. Delegates to other Medical Associations or Societies shall be required to carry out, in their representative capacity, the views and wishes of this Association; and such delegates shall act in strict accordance with the instructions of the Association. Any action taken by a delegate or delegates, in wilful opposition to the instructions of the Association, shall render such delegate or delegates liable to expulsion from fellowship in the Association, under the provisions of the Article relating to "Ethics and Discipline."

Sec. 3. The Association may or may not, at its pleasure, instruct its delegates; but all instructions to delegates shall be in the form of a resolution or resolutions passed at an annual or special meeting.

ARTICLE IX.

DELEGATES FROM OTHER ASSOCIATIONS AND SOCIETIES AND INVITED GUESTS.

Section 1. At any regular meeting of the Association, duly qualified delegates from other State Associations and Societies and from foreign Societies may be received, subject to the approval of the Council, and such delegates may read papers and participate in the scientific proceedings of the Association, when invited so to do by the President with the consent of the Association. The same privileges may be accorded in the same way to members of the medical profession who are not residents of the State of New York.

ARTICLE X.

MEETINGS.

SECTION 1. A regular meeting of the Association shall take place each year, and shall continue for at least three days.

SEC. 2. On each day of meeting the Association shall hold two sessions; a morning session to be devoted to the business of the Association, and an afternoon session to be devoted to scientific papers, communications, and discussions.

SEC. 3. The Order of Business for the morning session of the first day of each regular meeting of the Association shall be as follows:

I. Calling the meeting to order by the President, or in his absence, by one of the Vice-Presidents, at 10 A. M.
II. Reading the register of the meeting by the Secretary.
III. Report of the Committee of Arrangements.
IV. President's Address.
V. Annual report of the Council.
VI. Annual report of the Treasurer.
VII. Reports of Special Committees, to be read in the order of appointment of such Committees.
VIII. Unfinished business.
IX. New business.
X. Announcement by the presiding officer to the Fellows from the different districts that the Fellows representing such districts shall appoint two members of the Nominating Committee.
XI. Appointment by the President of a member at large of the Nominating Committee.
XII. Reading and adoption of the minutes of the session.
XIII. Adjournment of the session.

SEC. 4. The Order of Business for the morning session of the second day and of all subsequent days, except the last day, shall be as follows:

I. Calling of the meeting to order at 10 A. M.
II. Reading from the register of such names as have been added since the last reading of the register.
III. Communications from the Council.
IV. Reports of Special Committees, to be read in the order of appointment of such committees.
V. Unfinished business.
VI. New business.
VII. Reading and adoption of the minutes of the session.
VIII. Adjournment of the session.

SEC. 5. The Order of Business for the morning session of the last day of the meeting shall be as follows:

I. Calling the meeting to order at 10 A. M.
II. Reading from the register of such names as have been added since the last reading of the register.
III. Communications from the Council.
IV. Report of the Nominating Committee, and action upon such report by the Association.
V. Reports of Special Committees, to be read in the order of appointment of such committees.
VI. Unfinished business.
VII. New business.
VIII. Reading and adoption of the minutes of the session.
IX. Adjournment of the session.

SEC. 6. The morning sessions of the Association shall adjourn as nearly as possible at the hour of noon.

SEC. 7. The afternoon sessions of the Association shall begin at 2 P. M., and shall be devoted to the reading of papers either entire, by abstract, or by title only, as may be determined by the Council, to the discussion of such papers, and to voluntary communications when permission to make such voluntary communications has been given by the President with the consent of the Association.

SEC. 8. The reading of a paper shall not occupy more than thirty minutes, except by permission of the Association.

SEC. 9. No person shall speak more than once, and then not longer than ten minutes, in the discussion of any paper, except by permission of the Association.

SEC. 10. The author of a paper read before the Association shall have the right to close the discussion of such paper.

SEC. 11. No voluntary communication shall exceed fifteen minutes in length, except by permission of the Association; and voluntary communications may be discussed in accordance with the rules regulating the discussion of papers.

SEC. 12. The President shall call a special meeting of the Association when requested in writing so to do by fifteen members of the Council.

ARTICLE XI.

RULES OF ORDER.

RULE 1. Fifteen Fellows shall constitute a quorum for the transaction of business in morning session, and the presiding officer shall declare any meeting in morning session adjourned when it appears that a quorum is

no longer present; but a meeting may be called to order in afternoon session when a quorum is not present.

Rule 2. In the absence of the President and Vice-Presidents, the meeting may elect any Fellow present to act as President *pro tempore*.

Rule 3. When a motion is under debate, no motion shall be received except motions to adjourn, to lay on the table, for the previous question, to postpone, to refer, or to amend, which several motions shall have precedence in the order in which they are enumerated in this Rule.

Rule 4. A motion for the previous question shall not be entertained unless the same be seconded, and supported by at least four additional Fellows present.

Rule 5. Motions to adjourn, to lay on the table, and for the previous question, shall be decided without debate.

Rule 6. During the afternoon sessions, a motion to adjourn shall be in order at any time, except while a member has the floor, and such motion shall be decided without debate.

Rule 7. Every Fellow present at a meeting shall vote on all questions in morning sessions, unless excused from voting by the President with the consent of the Association.

Rule 8. The ayes and nays on any question, when called for by five Fellows present, shall be decided without debate, and shall be recorded in full in the minutes.

Rule 9. After a question has been decided in morning session, except one of indefinite postponement, any two Fellows who voted with the majority may, at the same or at any subsequent morning session of the same meeting, move for a reconsideration thereof, without which no discussion of such question shall be allowed.

Rule 10. Every Fellow shall have the right to speak once on any question under consideration, but not oftener, unless by permission of the Association.

Rule 11. All questions of order not provided for in these Rules shall be determined in accordance with the rules of order embodied in Cushing's "Manual of Parliamentary Practice."

ARTICLE XII.

Section 1. These By-Laws shall go into effect at the annual meeting of the Association in November, 1884.

ARTICLE XIII.

AMENDMENTS.

Section. 1. Amendments, alterations, or additions to these By-Laws may be made by a three-fourths vote of the Fellows present and voting at

a regular annual meeting; provided that notice of such amendments, alterations, or additions shall have been presented in writing at the regular annual meeting immediately preceding.

SEC. 2. These By-Laws, or any Article or any Section of any Article thereof, may be temporarily suspended at any morning or afternoon session of any regular meeting during such session only, and then only by a three-fourths vote of the Fellows present and voting.

LIST OF FELLOWS,

BY DISTRICT AND COUNTY.

FIRST OR NORTHERN DISTRICT.

FRANKLIN COUNTY.

Founder. Gillis, William. Fort Covington.

1

FULTON COUNTY.

Original. Blake, Clarence R. Northville.
Founder. de Zouche, Isaac. Gloversville.

2

HAMILTON COUNTY.

McGann, Thomas. Wells.

1

HERKIMER COUNTY.

Douglass, A. J. Ilion.
Ellis, J. B. Little Falls.
Fox, Eli. Mohawk.
Garlock, William D. Little Falls.
Original. Glidden, Charles H. Little Falls.
Green, H. H. Paine's Hollow.
Original. Potter, Vaughn C. Starkville.
Original. Sharer, John P. Little Falls.
Original. Southworth, Mark A. Little Falls.
Original. Young, John D. Starkville.

10

JEFFERSON COUNTY.

Founder. Abell, Ira H. Antwerp.
Founder. Crawe, J. Mortimer. Watertown.
Founder. Johnson, Charles M. Watertown.
Original. Johnson, Parley H. Adams.

4

LEWIS COUNTY.

Crosby, Alexander H. Lowville.
Douglass, Charles E. Constableville.
Joslin, Albert A. Greig.
Kilborn, Henry F. Croghan.

4

MONTGOMERY COUNTY.

Original. Ayres, Douglas. Fort Plain.
Original. Biggam, William H., Jr. Fort Plain.
French, S. H. Amsterdam.
Original. Graves, Ezra. Amsterdam.
Original. Johnson, Richard G. Amsterdam.
Klock, Charles M. St. Johnsville.
Original. Leach, H. M. Glen.
Parr, John. Buel.
Parsons, W. W. D. Fultonville.
Founder. Robb, William H. Amsterdam.
Original. Rulison, Elbert T. Amsterdam.
Simmons, Frank E. Canajoharie.
Smeallie, James A. Canajoharie.
Smyth, Arthur V. H. Minaville.

14

ONEIDA COUNTY.

Armstrong, James A. Clinton.
Original. Backus, Ogden. Utica.
Original. Bagg, Moses M. Utica.
Baker, Smith. Whitesborough.
Barnum, D. Albert. Cassville.
Original. Blumer, G. Alder. Utica.
Bond, George F. M. Utica.
Original. Booth, Wilbur H. Utica.
Original. Brush, Edward N. Utica.
Churchill, Alonzo. Utica.
Clarke, Wallace. Utica.
Crim, Frank D. Utica.
Dodge, Amos P. Oneida Castle.
Douglass, James W. Booneville.
English, G. P. Booneville.
Flandrau, Thomas M. Rome.
Fraser, Jefferson C. Ava.
Fuller, Earl D. Utica.
Gibson, William M. Utica.

Glass, James H. Utica.
Founder. *Gray, John P. Utica.
Gray, John P., Jr. Utica.
Holden, Arthur L. Utica.
Hughes, Henry R. Clinton.
Original. Hunt, James G. Utica.
Kelly, John Devin. Utica.
Kuhn, William. Rome.
Munger, Charles. Knoxboro.
Nelson, William H. Taberg.
Palmer, Henry C. Utica.
Palmer, Walter B. Utica.
Original. Pilgrim, Charles W. Utica.
Founder. Porter, Harry N. N. Y. Mills.
Quin, Hamilton S. Utica.
Reid, Christopher C. Rome.
Roberts, John L. D. N. Y. Mills.
Russell, Charles P. Utica.
Spicer, Walter E. Holland Patent.
Sutton, H. C. Rome.
Sutton, Richard E. Rome.
Swartwout, Leander. Prospect.
Tefft, Charles B. Utica.
Wagner, Charles Gray. Utica.
West, Joseph E. Utica.
West, M. Calvin. Rome.

45

OSWEGO COUNTY.

Bacon, Charles G. Fulton.
Bates, Nelson W. Central Square.
Cooley, R. N. Hannibal Centre.
Original. De Witt, Byron. Oswego.
Drake, D. Delos. Central Square.
Original. Hall, William A. Fulton.
Huntington, John W. Mexico.
Johnson, George P. Mexico.
Nelson, George W. Orwell.
Todd, John B. Parish.
Original. Tully, A. Melville. Oswego.

11

ST. LAWRENCE COUNTY.

Cook, Guy Reuben. Louisville.
Miller, J. H. Ogdensburg.

2

SECOND OR EASTERN DISTRICT.

ALBANY COUNTY.

Founder.	Bailey, Theodore P.	Albany.
Original.	*Hall, John E.	Green Island.
Original.	Houston, David W.	Cohoes.
Original.	Lyon, George E.	West Troy.
	Marsh, James P.	Green Island.
Founder.	Peters, Samuel.	Cohoes.
Founder.	Sabin, Robert H.	West Troy.
Founder.	Sabin, William B.	West Troy.
Original.	Van Vranken, Adam T.	West Troy.

9

CLINTON COUNTY.

Founder.	Dodge, Lyndhurst C.	Rouse's Point.
Original.	Howe, Edwin S.	Saranac.
Founder.	Lyon, E. M.	Plattsburgh.

3

COLUMBIA COUNTY.

Original.	Bates, Xyris T.	New Lebanon.
Original.	Benham, John C.	Hudson.
Original.	Lockwood, J. W.	Philmont.
Original.	Smith, H. Lyle.	Hudson.
Founder.	Wilson, Thomas.	Claverack.

5

ESSEX COUNTY.

Founder.	Barton, Lyman.	Willsborough.
	Church, Charles A.	Bloomingdale.
Original.	D'Avignon, Francis J.	Au Sable Forks.
Founder.	Edgerly, Edward F.	Moriah Centre.
Original.	La Bell, Martin J.	Lewis.
Original.	Pollard, Abiather.	Westport.
Original.	Rand, Hannibal W.	Keene.
Original.	Rice, Isaac.	Bloomingdale.
Original.	Riley, Andrew W.	Au Sable Forks.
Original.	Robinson, Ezra A.	Jay.
Founder.	Sawyer, Conant.	Au Sable Forks.
Original.	Turner, Melvin H.	Hammondsville.

12

*Deceased.

GREENE COUNTY.

Original.	Conkling, George.	Durham.
Original.	Selden, O. G.	Catskill.
Original.	Selden, Robert.	Catskill.

3

RENSSELAER COUNTY.

Original.	Allen, Amos.	Grafton Centre.
Founder.	Allen, Charles S.	Greenbush.
	Allen, William L.	Greenbush.
Original.	Baynes, William T.	Troy.
Founder.	Bonesteel, William N.	Troy.
Original.	Bontecou, Reed B.	Troy.
Original.	Bucklin, Daniel D.	Lansingburgh.
Founder.	Burbeck, Charles H.	Troy.
Founder.	Burton, Matthew H.	Troy.
	Case, M. W.	Troy.
Original.	Cooper, William C.	Troy.
Founder.	Cooper, William S.	Troy.
Original.	Crombie, Walter C.	Schaghticoke.
Founder.	Ferguson, Everard D.	Troy.
Founder.	Finder, William.	Troy.
Founder.	Hannan, James C.	Hoosick Falls.
Founder.	Harvie, J. B.	Troy.
Original.	Heimstreet, Thomas B.	Troy.
	Keith, Halbert Lyon.	West Sand Lake.
Original.	Lester, Sullivan W.	Troy.
Original.	McTammany, William F.	Troy.
Original.	Magee, Daniel.	Troy.
Founder.	Mitchell, Howard E.	Troy.
Founder.	Nichols, Calvin E.	Troy.
Founder.	Nichols, William H.	West Sand Lake.
Original.	Rogers, S. Frank.	Troy.
Founder.	Rousseau, Zotique.	Troy.
Founder.	Seymour, W. Wotkyns.	Troy.
Original.	Skinner, Smith A.	Hoosick Falls.
Original.	Traver, Richard D.	Troy.
	Ward, R. H.	Troy.
Original.	Winship, Charles A.	Eagle Mills.

32

SARATOGA COUNTY.

Founder.	Babcock, Myron N.	Saratoga Springs.
Founder.	Comstock, George F.	Saratoga Springs.

Founder. Creal, Charles E. Saratoga Springs.
Original. Dunlop, John J. Waterford.
Founder. Grant, Charles S. Saratoga Springs.
Original. Hall, William H. Saratoga Springs.
Founder. Hodgman, William H. Saratoga Springs.
Inlay, Erwin G. Conklingville.
Original. Johnson, Ianthus G. Greenfield Centre.
Keefer, Charles W. Mechanicsville.
Founder. McEwen, Robert C. Saratoga Springs.
Moriarta, D. C. Saratoga Springs.
Original. Preston, John R. Schuylerville.
Founder. Reynolds, Tabor B. Saratoga Springs.
Original. Sherer, John D. Waterford.
Original. Stubbs, Roland H. Waterford.

16

SCHENECTADY COUNTY.

Founder. De La Mater, Stephen G. Duanesburgh.
Ennis, Alexander. Pattersonville.
Original. McDonald, George E. Schenectady.
Original. Reagles, James R. Schenectady.
Steinführer, Gustavus A. F. Schenectady.
Original. Van Zandt, Henry C. Schenectady.

6

SCHOHARIE COUNTY.

Original. Hagadorn, William. Gilboa.
Original. Kingsley, Henry F. Schoharie.

2

WARREN COUNTY.

Original. Barney, Charles S. Glens Falls.
Original. Ferguson, James. Glens Falls.
Fitz Gerald, David J. Glens Falls.
Original. Martine, Godfrey R. Glens Falls.

4

WASHINGTON COUNTY.

Original. Hinds, Frederic J. Salem.
Lambert, John. Salem.
Long, Alfred J. Whitehall.

3

THIRD OR CENTRAL DISTRICT.

BROOME COUNTY.

	Allen, S. P. Whitney's Point.
Founder.	Chittenden, Joseph H. Binghamton.
Original.	Ely, Henry Oliver. Binghamton.
	Farrington, John M. Binghamton.
	Greene, Clark W. Chenango Forks.
Original.	Hall, Henry C. Leslie.
	Kenyon, Benjamin. Triangle.
	Knapp, W. H. Union Centre.
	McFarland, S. F. Binghamton.
	Meacham, Isaac D. Binghamton.
Founder.	Orton, John G. Binghamton.
	Pierce, Edward A. Binghamton.
	Pierson, G. E. Kirkwood.
Founder.	Putnam, Frederick W. Binghamton.
Original.	Race, W. F. Binghamton.
Founder.	Richards, Charles B. Binghamton.
	Wells, E. H. Binghamton.

17

CAYUGA COUNTY.

Original.	Kenyon, M. Moravia.
Original.	Laird, William R. Auburn.

2

CHEMUNG COUNTY.

Original.	Brown, Charles W. Elmira.
Original.	*Flood, Patrick H. Elmira.
	Morrell, Isaac. Elmira.
Original.	Price, John H. Elmira.
Original.	Ross, Frank W. Elmira.
	Squire, Charles L. Elmira.
Original.	Wales, Theron A. Elmira.

7

CHENANGO COUNTY.

Founder.	Avery, George W. Norwich.
Original.	Blair, Louis P. McDonough.
Original.	Brooks, Leroy J. Norwich.
	Copley, Herman D. Bainbridge.
	Guy, John D. Coventry.
	Hand, S. M. Norwich.

*Deceased.

	Hayes, Philetus A.	Afton.
Original.	Johnson, Leonard M.	Greene.
Original.	Lyman, Elijah S.	Sherburne.
Original.	Lyman, H. C.	Sherburne.
	Packer, Thurston G.	Smyrna.
	Smith, Samuel L.	Smithville.

12

CORTLAND COUNTY.

Original.	Clark, DeWitt.	Marathon.
Founder.	Green, Caleb.	Homer.
	Halbert, M. L.	Cincinnatus.
Founder.	Hendrick, Henry C.	McGrawville.
Founder.	Hyde, Frederick.	Cortland.
Founder.	Jewett, Homer O.	Cortland.
Original.	Smith, Marcellus R.	Cincinnatus.
Original.	Tripp, John D.	Virgil.

8

DELAWARE COUNTY.

Original.	Allaben, Orson M.	Margaretville.
	Morrow, William B.	Walton.
	Smith, George C.	Delhi.
	Travis, Edward M.	Masonville.
Original.	Young, Oscar H.	Sidney Centre.

5

MADISON COUNTY.

Original.	Babcock, H. E.	Canastota.
Original.	Birdsall, Gilbert.	N. Brookfield.
	Bullock, Ephraim H.	Cazenovia.
	Burhyte, O. W.	Brookfield.
	Cavana, Martin.	Oneida.
Original.	Carpenter, Henry W.	Oneida.
Original.	Nicholson, A. R.	Madison.
	Ure, Herman D.	Wampsville.

8

ONONDAGA COUNTY.

Original.	Aberdein, Robert.	Syracuse.
Founder.	Allen, Henry B.	Baldwinsville.
Original.	Cook, George W.	Syracuse.
Founder.	Dallas, Alexander J.	Syracuse.
	Didama, Emory A.	Syracuse.

Founder. Didama, Henry D. Syracuse.
Original. Donohue, Florence O. Syracuse.
Earle, George W. Tully.
Founder. Earll, George W. Skaneateles.
Original. Edwards, Amos S. Syracuse.
Elder, J. S. Lysander.
Original. Edwards, George A. Syracuse.
Founder. Elsner, Henry L. Syracuse.
Frazee, A. Blair. Elbridge.
Original. Gillette, Charles A. Syracuse.
Original. Hatch, C. A. Syracuse.
Founder. Head, Adelbert D. Syracuse.
Original. Higgins, Seabury M. Memphis.
Original. Jacobson, Nathan. Syracuse.
Original. Knapp, Edwin A. Jamesville.
Founder. Kneeland, Jonathan. South Onondaga.
Original. Munson, W. W. Otisco.
Founder. Parsons, Israel. Marcellus.
Original. Saxer, Leonard A. Syracuse.
Stephenson, F. Halleck. Syracuse.
Founder. Van de Warker, Ely. Syracuse.
Original. Whitford, James. Onondaga Valley.

27

OTSEGO COUNTY.

Original. Hills, Lyman H. Cooperstown.
Founder. Leaning, John K. Fly Creek.
Original. Martin, John H. Otego.
Original. Merritt, George. Cherry Valley.
Original. Sweet, Joseph. Unadilla.

5

SCHUYLER COUNTY.

Broderick, William P. Havana.
Roper, P. B. Alpine
Smelzer, Baxter T. Havana.

3

SENECA COUNTY.

Allison, Henry E. Willard.
Blaine, Myron D. Willard.
Founder. Lester, Elias. Seneca Falls.
Original. Rhodes, S. D. Seneca Falls.
Founder. Schoonmaker, E. J. Magee's Corners.
Seaman, Frank G. Seneca Falls.

6

TIOGA COUNTY.

Original. Ayer, W. L. Owego.
Original. Eastman, Robert W. Owego.
2

TOMPKINS COUNTY.

Founder. Beers, John E. Danby.
Founder. Fitch, William. Dryden.
Flickinger, John. Trumansburg.
3

FOURTH OR WESTERN DISTRICT.

ALLEGHANY COUNTY.

Original. Stephenson, James A. Scio.
Original. Wakely, Benjamin C. Angelica.
2

CATTARAUGUS COUNTY.

Original. Tompkins, Orren A. East Randolph.
Ellsworth, Victor A. East Otto.
2

CHAUTAUQUA COUNTY.

Founder. Ames, Edward. Sherman.
Founder. Chace, William. Mayville.
Original. Darling, Frank B. Westfield.
Founder. Dean, Harmon J. Brocton.
Rogers, H. Raymond. Dunkirk.
Founder. Strong, Thomas D. Westfield.
6

ERIE COUNTY.

Founder. Andrews, Judson B. Buffalo.
Original. Atwood, H. L. Collins Centre.
Original. Baker, Milan. Buffalo.
Original. Banta, Rollin L. Buffalo.
Original. Barker, Arthur M. Buffalo.
Original. Bartlett, Frederick W. Buffalo.
Original. Barton, Bernard. Buffalo.
Original. Boies, Loren F. East Hamburgh.
Original. Briggs, Albert H. Buffalo.
Brown, George L. Buffalo.

Original.	Burwell, George M.	Buffalo.
Founder.	Cronyn, John.	Buffalo.
Original.	Dagenais, Alphonse.	Buffalo.
Original.	Daniels, Clayton M.	Buffalo.
Original.	Dorland, Elias T.	Buffalo.
	Fell, George E.	Buffalo.
	Fowler, Joseph.	Buffalo.
	Frederick, Carlton C.	Buffalo.
	Gould, Cassius W.	Buffalo.
	Granger, William D.	Buffalo.
	Green, Stephen S.	Buffalo.
Original.	Greene, De Witt C.	Buffalo.
Founder.	Greene, Joseph C.	Buffalo.
Original.	Greene, Walter D.	Buffalo.
Original.	Harrington, D. W.	Buffalo.
	Hayd, Herman E.	Buffalo.
	Heath, William H.	Buffalo.
Founder.	Hoyer, F. F.	Tonawanda.
	Hubbell, Alvin A.	Buffalo.
Original.	Johnson, Thomas M.	Buffalo.
Original.	King, James E.	Buffalo.
	Long, Ben. G.	Buffalo.
Original.	Lynde, Uri C.	Buffalo.
Original.	Murray, William D.	Tonawanda.
	Park, Roswell.	Buffalo.
Original.	Pettit, John A.	Buffalo.
Original.	Putnam, James W.	Buffalo.
Founder.	Ring, William.	Buffalo.
Founder.	Rochester, Thomas F.	Buffalo.
	Stockton, Charles G.	Buffalo.
	Strong, Orville C.	Colden.
	Thornton, William H.	Buffalo.
Founder.	Tremaine, William S.	Buffalo.
	Trull, H. P.	Williamsville.
Original.	Vaughn, Frank O.	Buffalo.
	Wheeler, Isaac G.	Marilla.
Founder.	Wyckoff, Cornelius C.	Buffalo.

47

GENESEE COUNTY.

Original.	Crane, Frank W.	Corfu.
Founder.	Jackson, Albert P.	Oakfield.
Original.	McNamara, Daniel L.	Batavia.
Founder.	Sprague, William B.	Pavilion.

Founder. Townsend, Morris W. Bergen.
Woodward, C. H. Batavia.
6

LIVINGSTON COUNTY.

Dodge, Frank B. Mount Morris.
Founder. Gray, John W. Avon.
Jones, George H. Fowlerville.
Kneeland, B. T. Dalton.
Original. Menzie, R. J. Caledonia.
Original. Moyer, Frank H. Moscow.
6

MONROE COUNTY.

Original. Briggs, William H. Rochester.
Original. Buckley, Charles. Rochester.
Original. Buckley, James. Rochester.
Original. Burke, John J. A. Rochester.
Original. Collins, Thomas B. Rochester.
Original. Dunning, J. D. Webster.
Fenno, Henry M. Rochester.
Original. Fuller, Winfield S. Fairport.
Founder. Hovey, B. L. Rochester.
Maine, Alva P. Webster.
McDougall, William D. Spencerport.
Founder. Moore, Edward M. Rochester.
Original. Moore, Edward M., Jr. Rochester.
Original. Moore, Richard Mott. Rochester.
Nold, John B. Rochester.
Original. O'Hare, Thomas A. Rochester.
Original. Pease, Joseph. Hamlin.
Preston, B. I. Rochester.
Founder. Reynolds, R. C. Pittsford.
Snook, George. Parma.
20

NIAGARA COUNTY.

Original. Clark, Simeon T. Lockport.
Eddy, George P. Lewiston.
Huggins, William Q. Sanborn.
3

ONTARIO COUNTY.

Original. Allen, Duncan S. Seneca.
Original. Allen, James H. Gorham.

Founder.	Bentley, Francis R.	Cheshire.
Original.	Budd, J. Henry.	Geneva.
	Cruttenden, Albert G.	Clifton Springs.
	De Laney, John Pope.	Geneva.
Original.	Hicks, W. Scott.	Bristol.
Original.	Hollister, Edwin O.	East Bloomfield.
Founder.	Nichols, H. W.	Canandaigua.
Founder.	Simmons, E. W.	Canandaigua.
Founder.	Smith, Joseph T.	Canandaigua.
Original.	Vanderhoof, Frederick D.	Phelps.

12

ORLEANS COUNTY.

Original.	Bailey, William C.	Albion.
Original.	Barnum, Eugene E.	Waterport.
Founder.	Chapman, James.	Medina.
	Curtis, Daniel.	Jeddo.
Original.	Taylor, John H.	Holley.
Founder.	Tompkins, H. C.	Knowlesville.

6

STEUBEN COUNTY.

Original.	Dunn, Jeremiah.	Bath.
Original.	Ellison, Metler D.	Canisteo.
	Fowler, Thomas B.	Cohocton.
	Hunter, Nathaniel P.	Jasper.
Original.	Jamison, John S.	Hornellsville.
Original.	Perry, Nathaniel M.	Troupsburgh.
	Robinson, Joseph W.	Hornellsville.
	Wallace, Edwin E.	Jasper.

8

WAYNE COUNTY.

Founder.	Arnold, J. Newton.	Clyde.
Founder.	Colvin, Darwin.	Clyde.
	Horton, David B.	Red Creek.
Original.	Ingraham, Samuel.	Palmyra.
	Lamont, John C.	Sodus.
Original.	Landon, Newell E.	Newark.
	Nutten, Wilbur F.	Newark.
Founder.	Pomeroy, Charles G.	Newark.
Original.	Sayers, Alexander.	Marion.
Original.	Sprague, John A.	Williamson.
	Sprague, L. S.	Williamson.
Original.	Young, Augustus A.	Newark.

12

WYOMING COUNTY.

Original.	Ellinwood, A. G.	Attica.
	Lusk, Zera J.	Warsaw.
Original.	Palmer, George M.	Pike.
Original.	Rae, Robert.	Portageville.
	Rudgers, Denton W.	Perry.

5

YATES COUNTY.

	Oliver, William.	Penn Yan.
	Smith, David M.	Penn Yan.

2

FIFTH OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

	Baker, Benjamin N.	Rhinebeck.
Original.	Barnes, Edwin.	Pleasant Plains.
Original.	Bayley, Guy Carleton.	Poughkeepsie.
Founder.	Codding, George H.	Amenia.
Founder.	Cramer, William.	Poughkeepsie.
Original.	Fletcher, Charles L.	Wing's Station.
Founder.	Kittredge, Charles S.	Fishkill-on-Hudson.
Founder.	Leroy, Irving D.	Pleasant Valley.
Founder.	Porteous, James G.	Poughkeepsie.
Founder.	Pultz, Monroe T.	Stanfordville.
Founder.	*Slack, Henry.	Fishkill-on-Hudson.
Original.	Sutton, George Samuel.	East Fishkill.
Original.	Van Wyck, Richard C.	Hopewell Junction.
Original.	Young, John.	Fishkill-on-Hudson.

14

KINGS COUNTY.

Original.	Andrews, John S.	East New York.
Founder.	Baker, George W.	Brooklyn, E. D.
	Bell, A. Nelson.	Brooklyn.
	Benton, Stuart H.	Brooklyn.
	Bierwirth, Julius C.	Brooklyn.
Original.	Brundage, Amos H.	Brooklyn.
Original.	Conway, John Francis.	Brooklyn.
	Creamer, Joseph.	Brooklyn, E. D.

* Deceased.

Creamer, Joseph, Jr. Brooklyn, E. D.
Feeley, James F. Brooklyn, E. D.
Gardiner, William F. Brooklyn.
Founder. Hutchison, Joseph C. Brooklyn.
Original. Jenkins, John A. Brooklyn, E. D.
Original. Leighton, Nathaniel W. Brooklyn.
Little, Frank. Brooklyn.
Original. Lloyd, T. Mortimer. Brooklyn.
Original. Lung, Jesse B. Brooklyn.
* McClellan, Christopher R. Brooklyn.
Original. McCollom, William. Brooklyn.
Original. Minard, E. J. Chapin. Brooklyn.
Original. Murray, S. J. Brooklyn.
Original. North, Nelson L. Brooklyn.
Original. Paine, Arthur R. Brooklyn.
Original. Partridge, Charles C. Brooklyn.
Original. Pray, S. R. Brooklyn.
Risch, Henry F. Brooklyn.
Rochester, Thomas M. Brooklyn.
Founder. Rushmore, John D. Brooklyn.
Original. Russell, William G. Brooklyn.
Founder. Segur, Avery. Brooklyn.
Original. Shepard, A. Warren. Brooklyn.
Original. Sizer, Nelson Buell de S. Brooklyn.
Founder. Squibb, Edward H. Brooklyn.
Founder. Squibb, Edward R. Brooklyn.
Original. Steinke, Carl Otho Hermann. Brooklyn.
Sullivan, John D. Brooklyn.
Original. Thayer, William Henry Brooklyn.
Original. Wieber, George. Brooklyn.
Original. Williams, William H. Brooklyn.
Founder. Wyckoff, Richard M. Brooklyn.

40

NEW YORK COUNTY.

Agramonte, E. V. New York.
Original. Allen, S. Busby. New York.
Allen, Thomas H. New York.
Original. Arcularius, Lewis. New York.
Original. Arnold, Edmund S. F. New York.
Arnold, Glover C. New York.
Original. Bathgate, James. Morrisania, New York.
Original. Biggs, Hermann M. New York.
Original. Blakeman, William N. New York.

* Deceased.

Founder. Bozeman, Nathan. New York.
Original. Bryant, Joseph D. New York.
Original. Buchanan, Alexander. New York.
Original. Bull, Charles Stedman. New York.
Bull, William T. New York.
Original. Burchard, Thomas H. New York.
Founder. Cameron, Edward M. New York.
Original. Carter, H. Skelton. New York.
Original. Chauveau, Jean F. New York.
Original. Chrystie, T. M. Ludlow. New York.
Clark, Alonzo. New York.
Collins, Stacy B. New York.
Founder. Conover, William S. New York.
Conway, John R., Jr. New York.
Original. Curry, Walker. New York.
Damainville, Lucien. New York.
Original. Denison, C. Ellery. New York.
Original. Denison, Ellery. New York.
Founder. Dennis, Frederic S. New York.
Founder. Detmold, William. New York.
Founder. Du Bois, Abram. New York.
Original. Du Bois, Matthew B. New York.
Dudley, A. Palmer. New York.
Original. Eliot, Ellsworth. New York.
Farrington, Joseph O. New York.
Flinn, Thomas W. P. New York.
Founder. Flint, Austin, Jr. New York.
Founder. Flint, William H. New York.
Foster, George V. New York.
Frankenberg, Jacob H. New York.
Original. Franklin, Thomas M. New York.
Original. Furman, Guido. New York.
Original. Garrish, John P. New York.
Gleitzmann, J. W. New York.
Goldthwaite, Henry. New York.
Founder. Gouley, John W. S. New York.
Grauer, Frank. New York.
Original. Harrison, George Tucker. New York.
Original. Hartman, Jacob. New York.
Original. Hills, S. Augden. New York.
Founder. Hinton, John H. New York.
Founder. Hodgman, Abbott. New York.
Hubbard, Oliver P. New York.
Founder. Hubbard, Samuel T. New York.

Original. Ilgen, Ernest. New York.
Founder. Janeway, Edward G. New York.
Jenkins, William T. New York.
Kearney, Thomas J. New York.
Original. * Lauer, Eugen. New York.
Founder. Leale, Charles A. New York.
Lewengood, Samuel. New York.
Founder. Linsly, Jared. New York.
Lockwood, Charles E. New York.
Lukens, Anna. New York.
Founder. Lusk, William T. New York.
Lynch, Patrick J. New York.
MacGregor, James R. New York.
McIlroy, Samuel H. New York.
Founder. McLeod, S. B. Wylie. New York.
Original. McLochlin, James A. New York.
Original. McNamara, Laurence J. New York.
Founder. Manley, Thomas H. New York.
Mathews, David. New York.
Meier, Gottlieb C. H. New York.
Original. Miller, William T. New York.
Original. Miranda, Ramon L. New York.
Original. Mitchell, Hubbard W. New York.
Original. Murphy, John. New York.
Original. Murray, Byron J. New York.
Newberry, John S. New York.
Original. Newman, Robert. New York.
Founder. Nicoll, Henry D. New York.
Original. Oberndorfer, Isidor P. New York.
Palmer, Edmund J. New York.
Original. Parsons, John. New York.
Perry, John Gardner. New York.
Original. Porter, P. Brynberg. New York.
Founder. Purple, Samuel S. New York.
Ransom, H. B. New York.
Read, Ira B. New York.
Original. Ricketts, Benjamin M. New York.
Roth, Julius A. New York.
Ruggles, Augustus D. New York.
Original. Sabine, Gustavus A. New York.
Sanders, E. New York.
Founder. Sayre, Lewis A. New York.
Founder. Sayre, Lewis Hall. New York.

* Deceased.

	Sayre, Reginald H.	New York.
	Shrady, John.	New York.
Original.	Skiff, George V.	New York.
Original.	Smith, J. Lewis.	New York.
Original.	Smith, Samuel W.	New York.
Original.	Smith, Stephen.	New York.
Founder.	Taylor, Isaac E.	New York.
Founder.	Thomas, T. Gaillard.	New York.
Founder.	Tucker, Carlos P.	New York.
	Van Fleet, Frank.	New York.
	Vincent, Ludger C.	New York.
Original.	Wallach, Joseph G.	New York.
	Walsh, Simon J.	New York.
Founder.	Ward, Charles S.	New York.
	Warner, John W.	New York.
Founder.	White, Whitman V.	New York.
Founder.	White, William T.	New York.
Founder.	Wiener, Joseph.	New York.
Founder.	Wood, Charles S.	New York.
Original.	Wyeth, John A.	New York.

116

ORANGE COUNTY.

	Conner, Milton C.	Middletown.
Original.	Eager, William B.	Middletown.
Original.	Hunt, James H.	Port Jervis.
Original.	Pooler, Hiram A.	Goshen.

4

PUTNAM COUNTY.

Founder.	Murdock, George W.	Cold Spring.
Founder.	Young, William.	Cold Spring.

2

QUEENS COUNTY.

Original.	Burns, William J.	Roslyn.
Original.	Rave, Edward G.	Oyster Bay.
Original.	Webb, Edwin.	Hempstead.

3

RICHMOND COUNTY.

Founder.	Carroll, Alfred Ludlow.	New Brighton.

40

Founder. Johnston, Francis U. New Brighton.
Walser, Wm. C. Port Richmond.
3

ROCKLAND COUNTY.

Founder. Govan, William. Stony Point.
Stevenson, William G. Nyack.
2

SUFFOLK COUNTY.

Original. Banks, George B. Huntington.
Original. Chambers, Martin L. Port Jefferson.
Hamill, Edward H. Islip.
Hulse, William A. Bay Shore.
Original. Lindsay, Walter. Huntington.
Founder. Woodend, William D. Huntington.
6

SULLIVAN COUNTY.

Original. Bennett, Thomas W. Jeffersonville.
De Kay, William H. Parksville.
Original. Gillespie, Alfred A. Bethel.
Original. Munson, J. A. Grahamsville.
4

ULSTER COUNTY.

Original. Chambers, Jacob. Kingston.
Original. HoornBeek, Philip Du Bois. Wawarsing.
Founder. Hühne, August. Rondout.
Original. Hühne, Frederick. Rondout.
Keefe, Christopher F. Rondout.
Original. Van Hoevenberg, Henry. Kingston.
Original. Ward, Stanley M. Ellenville.
7

WESTCHESTER COUNTY.

Ashton, Isaiah H. Dobbs Ferry.
Original. Brush, Edward F. Mount Vernon.
Original. Coutant, Richard B. Tarrytown.
Original. Furman, J. Henry. Tarrytown.
Original. Huntington, Henry K. New Rochelle.
Founder. Husted, Nathaniel C. Tarrytown.
Original. Lyons, G. A. New Rochelle.

Founder. Pryer, William C. New Rochelle.
Original. Schmidt, H. Ernest. White Plains.
Original. Southworth, Richmond Joseph. Yonkers.
Original. Wells, William L. New Rochelle.
11

SUMMARY OF FELLOWSHIP BY DISTRICT.

First District,	94
Second District,	95
Third District,	105
Fourth District,	137
Fifth District,	212
Total Fellowship,	643

ALPHABETICAL LIST OF FELLOWS.

Abell, Ira H., Antwerp, Jefferson Co. Founder.
Aberdein, Robert, 2 Greeley Block, Syracuse, Onondaga Co. Original.
Agramonte, E. V., 414 W. 47th St., New York, New York Co.
Allaben, Orson M., Margaretville, Delaware Co. Original.
Allen, Amos, Grafton, Rensselaer Co. Original.
Allen, Charles S., Greenbush, Rensselaer Co. Founder.
Allen, Duncan S., Seneca, Ontario Co. Original.
Allen, Henry B., Baldwinsville, Onondaga Co. Founder.
Allen, James H., Gorham, Ontario Co. Original.
Allen, S. Busby, 144 E. 83d St., New York, New York Co. Original.
Allen, S. P., Whitney's Point, Broome Co.
Allen, Thomas H., 19 Park Ave., New York, New York Co.
Allen, William L., Greenbush, Rensselaer Co.
Allison, Henry E., Willard, Seneca Co.
Ames, Edward, Sherman, Chautauqua Co. Founder.
Andrews, John S., Pennsylvania Ave., n. Fulton Ave., Brooklyn, Kings Co. Original.
Andrews, Judson B., Buffalo Insane Asylum, Buffalo, Erie Co. Founder.
Arcularius, Lewis, 180 2d Ave., New York, New York Co. Original.
Armstrong, James A., Clinton, Oneida Co.
Arnold, Edmund S. F., 53 W. 38th St., New York, New York Co. Original.
Arnold, Glover C., 115 E. 30th St., New York, New York Co.
Arnold, J. Newton, Clyde, Wayne Co. Founder.
Ashton, Isaiah H., Dobbs Ferry, Westchester Co.
Atwood, H. L., Collins Centre, Erie Co. Original.
Avery, George W., Norwich, Chenango Co. Founder.
Ayer, W. L., Owego, Tioga Co. Original.
Ayres, Douglas, Fort Plain, Montgomery Co. Original.
Babcock, H. E., Canastota, Madison Co. Original.
Babcock, Myron N., Saratoga Springs, Saratoga Co. Founder.
Backus, Ogden, State Lunatic Asylum, Utica, Oneida Co. Original.
Bacon, Charles G., Fulton, Oswego Co.
Bagg, Moses M., Utica, Oneida Co. Original.
Bailey, Theodore P., 95 Eagle St., Albany, Albany Co. Founder.
Bailey, William C., Albion, Orleans Co. Original.

Baker, Benjamin N., Rhinebeck, Dutchess Co.
Baker, George W., 518 Bedford Ave., Brooklyn, E. D., Kings Co. Founder.
Baker, Milan, 471 Niagara St., Buffalo, Erie Co. Original.
Baker, Smith, Whitesborough, Oneida Co.
Banks, George B., Huntington, Suffolk Co. Original.
Banta, Rollin L., 330 Elk St., Buffalo, Erie Co. Original.
Barker, Arthur M., 137 W. Tupper St., Buffalo, Erie Co. Original.
Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.
Barnum, D. Albert, Cassville, Oneida Co.
Barnum, Eugene E., Waterport, Orleans Co. Original.
Barney, Charles S., Glens Falls, Warren Co. Original.
Bartlett, Frederick W., 112 Ellicott St., Buffalo, Erie Co. Original.
Barton, Lyman, Willsborough, Essex Co. Founder.
Bartow, Bernard, 220 Franklin St., Buffalo, Erie Co.
Bates, Nelson W., Central Square, Oswego Co.
Bates, Xyris T., New Lebanon, Columbia Co. Original.
Bathgate, James, Fordham Ave., Morrisania, New York, New York Co. Original.
Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.
Baynes, William T., 189 N. 2d St., Troy, Rensselaer Co. Original.
Beers, John E., Danby, Tompkins Co. Founder.
Bell, A. Nelson, 113½ 2d Place, Brooklyn, Kings Co.
Benham, John C., Hudson, Columbia Co. Original.
Bennett, Thomas W., Jeffersonville, Sullivan Co. Original.
Bentley, Francis R., Cheshire, Ontario Co. Founder.
Benton, Stuart H., 546 Franklin Ave., Brooklyn, Kings Co.
Bierwirth, Julius C., 201 Clinton St., Brooklyn, Kings Co.
Biggam, William H., Jr., Fort Plain, Montgomery Co. Original.
Biggs, Hermann M., 338 E. 26th St., New York, New York Co. Original.
Birdsall, Gilbert, N. Brookfield, Madison Co. Original.
Blaine, Myron D., Willard, Seneca Co.
Blair, Louis P., McDonough, Chenango Co. Original.
Blake, Clarence R., Northville, Fulton Co. Original.
Blakeman, William N., 28 W. 37th St., New York, New York Co. Original.
Blumer, G. Alder, State Lunatic Asylum, Utica, Oneida Co. Original.
Boies, Loren F., East Hamburgh, Erie Co. Original.
Bond, G. F. M., Asylum, Utica, Oneida Co.
Bonesteel, William N., Mill St., Troy, Rensselaer Co. Founder.
Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co. Original.
Booth, Wilbur H., 172 Genesee St., Utica, Oneida Co. Original.
Bozeman, Nathan, 307 5th Ave., New York, New York Co. Founder.
Briggs, Albert H., 267 Hudson St., Buffalo, Erie Co. Original.
Briggs, William H., 138 E. Main St., Rochester, Monroe Co. Original.
Broderick, William P., Havana, Schuyler Co.

Brooks, Leroy J., Norwich, Chenango Co. Original.
Brown, Charles W., 312 W. Church St., Elmira, Chemung Co. Original.
Brown, George L., 173 Niagara St., Buffalo, Erie Co.
Brundage, Amos H., 666 Gates Ave., Brooklyn, Kings Co. Original.
Brush, Edward N., State Lunatic Asylum, Utica, Oneida Co. Original.
Brush, Edward F., Mount Vernon, Westchester Co. Original.
Bryant, Joseph D., 66 W. 35th St., New York, New York Co. Original.
Buchanan, Alexander, 355 W. 30th St., New York, New York Co. Original.
Buckley, Charles, 127 E. Main St., Rochester, Monroe Co. Original.
Buckley, James, 127 E. Main St., Rochester, Monroe Co. Original.
Bucklin, Daniel D., 575 2d Ave., Lansingburgh, Rensselaer Co. Original.
Budd, J. Henry, Geneva, Ontario Co. Original.
Bull, Charles Stedman, 51 W. 36th St., New York, New York Co. Original.
Bull, William T., 35 W. 35th St., New York, New York Co.
Bullock, Ephraim H., Cazenovia, Madison Co.
Burbeck, Charles H., 91 1st St., Troy, Rensselaer Co. Founder.
Burchard, Thomas H., 24 W. 40th St., New York, New York Co. Original.
Burhyte, O. W., Brookfield, Madison Co.
Burke, John J. A., 65 East Ave., Rochester, Monroe Co. Original.
Burns, William J., Roslyn, Queens Co. Original.
Burton, Matthew H., 75 4th St., Troy, Rensselaer Co. Founder.
Burwell, George N., 130 Pearl St., Buffalo, Erie Co. Original.
Cameron, Edward M., 47 W. 26th St., New York, New York Co. Founder.
Carpenter, Henry W., Oneida, Madison Co. Original.
Carroll, Alfred Ludlow, New Brighton, Richmond Co. Founder.
Carter, H. Skelton, 130 E. 24th St., New York, New York Co. Original.
Case, M. W., 39 2d Street, Troy, Rensselaer Co.
Cavana, Martin, Oneida, Madison Co.
Chace, William, Mayville, Chautauqua Co. Founder.
Chambers, Jacob, Kingston, Ulster Co. Original.
Chambers, Martin L., Port Jefferson, Suffolk Co. Original.
Chapman, James, Medina, Orleans Co. Founder.
Chauveau, Jean F., 6 Ludlow Pl., New York, New York Co. Original.
Chittenden, Joseph H., Binghamton, Broome Co. Founder.
Chrystie, T. M. Ludlow, 216 W. 46th St., New York, New York Co. Original.
Church, Charles A., Bloomingdale, Essex Co.
Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co.
Clark, Alonzo, 23 E. 21st St., New York, New York Co.
Clark, De Witt C., Marathon, Cortland Co. Original.
Clark, Simeon Tucker, Lockport, Niagara Co. Original.
Clarke, Wallace, 136 Park Ave., Utica, Oneida Co.
Codding, George H., Amenia, Dutchess Co. Founder.
Collins, Stacy B., 106 E. 35th St., New York, New York Co.

Collins, Thomas B., 141 E. Main St., Rochester, Monroe Co. Original.
Colvin, Darwin, Clyde, Wayne Co. Founder.
Comstock, George F., Saratoga Springs, Saratoga Co. Founder.
Conkling, George, Durham, Greene Co. Original.
Conner, Milton C., Middletown, Orange Co.
Conover, William S., 108 E. 29th St., New York, New York Co. Founder.
Conway, John Francis, 388 Bedford Ave., Brooklyn, Kings Co. Original.
Conway, John R., Jr., 14 Lexington Ave., New York, New York Co.
Cook, George W., Syracuse, Onondaga Co. Original.
Cook, Guy Reuben, Louisville, St. Lawrence Co.
Cooley, R. N., Hannibal Centre, Oswego Co.
Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.
Cooper, William S., 81 3d St., Troy, Rensselaer Co. Founder.
Copley, Herman D., Bainbridge, Chenango Co.
Coutant, Richard B., Tarrytown, Westchester Co. Original.
Cramer, William, Poughkeepsie, Dutchess Co. Founder.
Crane, Frank W., Corfu, Genesee Co. Original.
Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.
Creal, Charles E., Saratoga Springs, Saratoga Co. Founder.
Creamer, Joseph, 144 Hewes St., Brooklyn, E. D., Kings Co.
Creamer, Joseph, Jr., 284 4th St., Brooklyn, E. D., Kings Co.
Crim, Frank D., 171 Genesee St., Utica, Oneida Co.
Crombie, Walter C., Schaghticoke, Rensselaer Co. Original.
Cronyn, John, 55 W. Swan St., Buffalo, Erie Co. Founder.
Crosby, Alexander H., Lowville, Lewis Co.
Cruttenden, Albert G., Clifton Springs, Ontario Co.
Curry, Walker, 21 E. 61st St., New York, New York Co. Original.
Curtis, Daniel, Jeddo, Orleans Co.
Dagenais, Alphonse, 348 E. Eagle St., Buffalo, Erie Co. Original.
Dallas, Alexander J., 48 Warren St., Syracuse, Onondaga Co. Founder.
Damainville, Lucien, 122 W. 53d St., New York, New York Co.
Daniels, Clayton M., 82 N. Pearl St., Buffalo, Erie Co. Original.
Darling, Frank B., Westfield, Chautauqua Co. Original.
D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
Dean, Harmon J., Brocton, Chautauqua Co. Founder.
De Kay, William H., Parksville, Sullivan Co.
De La Mater, S. G., Duanesburg, Schenectady Co. Founder.
De Laney, John Pope, Geneva, Ontario Co.
Denison, Charles Ellery, 124 W. 13th St., New York, New York Co. Original.
Denison, Ellery, 124 W. 13th St., New York, New York Co. Original.
Dennis, Frederic S., 21 E. 21st St., New York, New York Co. Founder.
Detmold, William, 38 E. 9th St., New York, New York Co. Founder.
De Witt, Byron, Oswego, Oswego Co. Original.

de Zouche, Isaac, Gloversville, Fulton Co. Founder.
Didama, Emory A., 112 S. Salina St., Syracuse, Onondaga Co.
Didama, Henry D., 112 S. Salina St., Syracuse, Onondaga Co. Founder.
Dodge, Amos P., Oneida Castle, Oneida Co.
Dodge, Frank B., Mount Morris, Livingston Co.
Dodge, Lyndhurst C., Rouse's Point, Clinton Co. Founder.
Donohue, Florence O., 54 S. Clinton St., Syracuse, Onondaga Co. Original.
Dorland, Elias T., 86 N. Division St., Buffalo, Erie Co. Original.
Douglass, A. J., Ilion, Herkimer Co.
Douglass, Charles E., Constableville, Lewis Co.
Douglass, James W., Booneville, Oneida Co.
Drake, D. Delos, Central Square, Oswego Co.
Du Bois, Abram, 16 W. 30th St., New York, New York Co. Founder.
Du Bois, Matthew B., 16 W. 30th St., New York, New York Co. Original.
Dudley, A. Palmer, 640 Madison Ave., New York, New York Co.
Dunlop, John J., Waterford, Saratoga Co. Original.
Dunn, Jeremiah, Bath, Steuben Co. Original.
Dunning, J. D., Webster, Monroe Co. Original.
Eager, William B., Middletown, Orange Co. Original.
Earle, George W., Tully, Onondaga Co.
Earll, George W., Skaneateles, Onondaga Co. Founder.
Eastman, Robert W., Owego, Tioga Co. Original.
Eddy, George P., Lewiston, Niagara Co.
Edgerly, Edward F., Moriah Centre, Essex Co. Founder.
Edwards, Amos S., 367 N. Salina St., Syracuse, Onondaga Co. Original.
Edwards, George A., Catharine and Lodi Sts., Syracuse, Onondaga Co. Original.
Elder, J. Stevens, Lysander, Onondaga Co.
Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original.
Ellinwood, A. G., Attica, Wyoming Co. Original.
Ellis, J. B., Little Falls, Herkimer Co.
Ellison, Metler D., Canisteo, Steuben Co. Original.
Ellsworth, Victor A., East Otto, Cattaraugus Co.
Elsner, Henry L., 308 N. Salina St., Syracuse, Onondaga Co. Founder.
Ely, Henry Oliver, Binghamton, Broome Co. Original.
English, G. P., Booneville, Oneida Co.
Ennis, Alexander, Pattersonville, Schenectady Co.
Farrington, John M., Binghamton, Broome Co.
Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
Feely, James F., 296 Lorimer St., Brooklyn, E. D., Kings Co.
Fell, George E., 72 Niagara St., Buffalo, Erie Co.
Fenno, Henry Marshall, 77 W. Main St., Rochester, Monroe Co.
Ferguson, Everard D., 1 Union Place, Troy, Rensselaer Co. Founder.
Ferguson, James, Glens Falls, Warren Co. Original.

Finder, William, Jr., 2 Union Place, Troy, Rensselaer Co. Founder.
Fitch, William, Dryden, Tompkins Co. Founder.
Fitzgerald, David J., Glens Falls, Warren Co.
Flandrau, Thomas M., Rome, Oneida Co.
Fletcher, Charles L., Wing Station, Dutchess Co. Original.
Flickinger, John, Trumansburg, Tompkins Co.
Flinn, Thomas W. P., 137 E. 28th St., New York, New York Co.
Flint, Austin, Jr., 14 W. 33d St., New York, New York Co. Founder.
Flint, William H., 37 E. 33d St., New York, New York Co. Founder.
*Flood, Patrick H., 501 E. Water St., Elmira, Chemung Co. Original.
Foster, George V., 109 E. 18th St., New York, New York Co.
Fowler, Joseph, 31 Church St., Buffalo, Erie Co.
Fowler, Thomas B., Coshocton, Steuben Co.
Fox, Eli, Mohawk, Herkimer Co.
Frankenberg, Jacob H., 142 E. 74th St., New York, New York Co.
Franklin, Thomas M., Blackwell's Island Lunatic Asylum, New York, New York Co. Original.
Fraser, Jefferson C., Ava, Oneida Co.
Frazee, A. Blair, Elbridge, Onondaga Co.
Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.
French, S. H., Amsterdam, Montgomery Co.
Fuller, Earl D., 66 Varick St., Utica, Oneida Co.
Fuller, Winfield S., Fairport, Monroe Co. Original.
Furman, Guido, 425 W. 73d St., New York, New York Co. Original.
Furman, J. Henry, Tarrytown, Westchester Co. Original.
Gardiner, W. F., 162 Sixth Ave., Brooklyn, Kings Co.
Garlock, William D., Little Falls, Herkimer Co.
Garrish, John P., 400 W. 57th St., New York, New York Co. Original.
Gibson, William M., 187 Genesee St., Utica, Oneida Co.
Gillespie, Alfred A., Bethel, Sullivan Co. Original.
Gillette, Charles A., S. Salina and Castle Sts., Syracuse, Onondaga Co. Original.
Gillis, William, Fort Covington, Franklin Co. Founder.
Glass, James H., 170 Genesee St., Utica, Oneida Co.
Gleitzmann, J. W., 117 2d Ave., New York, New York Co.
Glidden, Charles H., Little Falls, Herkimer Co. Original.
Goldthwaite, Henry, Fifth Avenue Hotel, New York, New York Co.
Gould, Cassius W., 1428 Main St., Buffalo, Erie Co.
Gouley, John W. S., 324 Madison Ave., New York, New York Co. Founder.
Govan, William, Stony Point, Rockland Co. Founder.
Grauer, Frank, 338 E. 26th St., New York, New York Co.
Granger, William D., Asylum, Buffalo, Erie Co.
Grant, Charles S., Saratoga Springs, Saratoga Co. Founder.

*Deceased.

Graves, Ezra, Amsterdam, Montgomery Co. Original.
*Gray, John P., State Lunatic Asylum, Utica, Oneida Co. Founder.
Gray, John P., Jr., State Lunatic Asylum, Utica, Oneida Co.
Gray, John W., Avon, Livingston Co. Founder.
Green, Caleb, Homer, Cortland Co. Founder.
Green, H. H., Paine's Hollow, Herkimer Co.
Green, Stephen S., 384 Swan St., Buffalo, Erie Co.
Greene, Clark W., Chenango Forks, Broome Co.
Greene, De Witt C., Buffalo, Erie Co. Original.
Greene, Joseph C., 124 E. Swan St., Buffalo, Erie Co. Founder.
Greene, Walter D., 444 Elk St., Buffalo, Erie Co. Original.
Guy, J. D., Coventry, Chenango Co.
Hagadorn, William, Gilboa, Schoharie Co. Original.
Halbert, M. L., Cincinnatus, Cortland Co.
Hall, Henry C., Leslie, Broome Co. Original.
*Hall, John E., 62 George St., Green Island, Albany Co. Original.
Hall, William A., 38 Montgomery St., Syracuse, Onondaga Co. Original.
Hall, William H., Saratoga Springs, Saratoga Co. Original.
Hamill, Edward H., Islip, Suffolk Co.
Hand, S. M., Norwich, Chenango Co.
Hannan, James C., Hoosick Falls, Rensselaer Co. Founder.
Harrington, D. W., 1430 Main St., Buffalo, Erie Co. Original.
Harrison, George Tucker, 221 W. 23d St., New York, New York Co. Original.
Hartmann, Jacob, 217 W. 31st St., New York, New York Co. Original.
Harvie, J. B., 565 1st St., Troy, Rensselaer Co. Founder.
Hatch, C. A., 6 E. Onondaga St., Syracuse, Onondaga Co. Original.
Hayd, Herman E., 9 Niagara St., Buffalo, Erie Co.
Hayes, Philetus A., Afton, Chenango Co.
Head, Adelbert D., Syracuse, Onondaga Co. Founder.
Heath, William H., 5 Chippewa St., Buffalo, Erie Co.
Heimstreet, Thomas B., 14 Division St., Troy, Rensselaer Co. Original.
Hendrick, Henry C., McGrawville, Cortland Co. Founder.
Hicks, W. Scott, Bristol, Ontario Co. Original.
Higgins, Seabury M., Memphis, Onondaga Co. Original.
Hills, Lyman H., Cooperstown, Otsego Co. Original.
Hills, Samuel Augden, 53 E. 123d St., New York, New York Co. Original.
Hinds, Frederic J., Salem, Washington Co. Original.
Hinton, John H., 41 W. 32d St., New York, New York Co. Founder.
Hodgman, Abbott, 141 E. 38th St., New York, New York Co. Founder.
Hodgman, William H., 109 Caroline St., Saratoga Springs, Saratoga Co. Founder.
Holden, Arthur L., 116 South St , Utica, Oneida Co.

*Deceased.

Hollister, Edwin O., East Bloomfield, Ontario Co. Original.
HoornBeek, Philip Du Bois, Wawarsing, Ulster Co. Original.
Horton, David B., Red Creek, Wayne Co.
Houston, David W., 62 Oneida St., Cohoes, Albany Co. Original.
Hovey, B. L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.
Howe, Edwin S., Saranac, Clinton Co. Original.
Hoyer, F. F., Tonawanda, Erie Co. Founder.
Hubbard, Oliver P., 65 W. 19th St., New York, New York Co.
Hubbard, Samuel T., 27 W. 9th St., New York, New York Co. Founder.
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.
Huggins, William Q., Sanborn, Niagara Co.
Hughes, Henry R., Clinton, Oneida Co.
Hühne, August, Rondout, Ulster Co. Founder.
Hühne, Frederick, Rondout, Ulster Co. Original.
Hulse, William A., Bay Shore, Suffolk Co.
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original.
Hunt, James H., Port Jervis, Orange Co. Original.
Hunter, Nathaniel P., Jasper, Steuben Co.
Huntington, Henry K., New Rochelle, Westchester Co. Original.
Huntington, John W., Mexico, Oswego Co.
Husted, Nathaniel C., Tarrytown, Westchester Co. Founder.
Hutchison, Joseph C., 130 Hicks St., Brooklyn, Kings Co. Founder.
Hyde, Frederick, Cortland, Cortland Co. Founder.
Ilgen, Ernest, 213 E. 17th St., New York, New York Co. Original.
Ingraham, Samuel, Palmyra, Wayne Co. Original.
Inlay, Erwin G., Conklingville, Saratoga Co.
Jackson, Albert P., Oakfield, Genesee Co. Founder.
Jacobson, Nathan, 114 S. Salina St., Syracuse, Onondaga Co. Original.
Jamison, John S., Hornellsville, Steuben Co. Original.
Janeway, Edward G., 51 E. 25th St., New York, New York Co. Founder.
Jenkins, John A., 150 Milton St., Brooklyn, E. D., Kings Co. Original.
Jenkins, William T., 71 Lexington Ave., New York, New York Co.
Jewett, Homer O., Cortland, Cortland Co. Founder.
Johnson, Charles M., Watertown, Jefferson Co. Founder.
Johnson, George P., Mexico, Oswego Co.
Johnson, Ianthus G., Greenfield Centre, Saratoga Co. Original.
Johnson, Leonard M., Greene, Chenango Co. Original.
Johnson, Parley H., Adams, Jefferson Co. Original.
Johnson, Richard G., Amsterdam, Montgomery Co. Original.
Johnson, Thomas M., 309 Main St., Buffalo, Erie Co. Original.
Johnston, Francis U., New Brighton, Richmond Co. Founder.
Jones, George H., Fowlerville, Livingston Co.
Joslin, Albert A., Greig, Lewis Co.
Kearney, Thomas J., 107 Lexington Ave., New York, New York Co.

Keefe, Christopher F., Rondout, Ulster Co.
Keefer, Charles W., Mechanicsville, Saratoga Co.
Keith, Halbert Lyon, West Sand Lake, Rensselaer Co.
Kelly, John Devin, 181 Genesee St., Utica, Oneida Co.
Kenyon, Benjamin, Triangle, Broome Co.
Kenyon, M., Moravia, Cayuga Co. Original.
Kilborn, Henry F., Croghan, Lewis Co.
King, James E., 16 E. Seneca St., Buffalo, Erie Co. Original.
Kingsley, Henry F., Schoharie, Schoharie Co. Original.
Kittredge, Charles S., Fishkill-on-Hudson, Dutchess Co. Founder.
Klock, Charles M., St. Johnsville, Montgomery Co.
Knapp, Edwin A., Jamesville, Onondaga Co. Original.
Knapp, W. H., Union Centre, Broome Co.
Kneeland, B. T., Dalton, Livingston Co.
Kneeland, Jonathan S., Onondaga, Onondaga Co. Founder.
Kuhn, William, Rome, Oneida Co.
La Bell, Martin J., Lewis, Essex Co. Original.
Laird, William R., 98 Wall St., Auburn, Cayuga Co. Original.
Lambert, John, Salem, Washington Co.
Lamont, John C., Sodus, Wayne Co.
Landon, Newell E., Newark, Wayne Co. Original.
*Lauer, Eugene, 308 E. 15th St., New York, New York Co. Original.
Leach, H. M., Glen, Montgomery Co. Original.
Leale, Charles A., 604 Madison Ave., New York, New York Co. Founder.
Leaning, John K., Fly Creek, Otsego Co. Founder.
Leighton, N. W., 143 Taylor St., Brooklyn, E. D., Kings Co. Original.
Le Roy, Irving D., Pleasant Valley, Dutchess Co. Founder.
Lester, Elias, Seneca Falls, Seneca Co. Founder.
Lester, Sullivan W., 381 1st St., Troy, Rensselaer Co. Original.
Lewengood, Samuel, 129 E. 84th St., New York, New York Co.
Lindsay, Walter, Huntington, Suffolk Co. Original.
Linsly, Jared, 22 Lafayette Place, New York, New York Co. Founder.
Little, Frank, 135 Remsen St., Brooklyn, Kings Co.
Lloyd, T. Mortimer, 265 Henry St., Brooklyn, Kings Co. Original.
Lockwood, Charles E., 29 W. 36th St., New York, New York Co.
Lockwood, J. W., Philmont, Columbia Co. Original.
Long, Alfred J., Whitehall, Washington Co.
Long, Ben G., 1430 Main St., Buffalo, Erie Co.
Lukens, Anna., 1068 Lexington Ave., New York, New York Co.
Lung, Jesse B., 662 Herkimer St., Brooklyn, Kings Co. Original.
Lusk, William T., 47 E. 34th St., New York, New York Co. Founder.
Lusk, Zera J., Warsaw, Wyoming Co.
Lyman, Elijah S., Sherburne, Chenango Co. Original.

*Deceased.

Lyman, H. C., Sherburne, Chenango Co. Original.
Lynch, Patrick J., 216 E. 13th St., New York, New York Co.
Lynde, Uri C., 13 Niagara St., Buffalo, Erie Co. Original.
Lyon, E. M., Plattsburgh, Clinton Co. Founder.
Lyon, George E., 494 Groton St., West Troy, Albany Co. Original.
Lyons, G. A., New Rochelle, Westchester Co. Original.
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Magee, Daniel, 116 3d St., Troy, Rensselaer Co. Original.
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Manley, Thomas H., 244 W. 55th St., New York, New York Co. Founder.
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Martin, John H., Otego, Otsego Co. Original.
Martine, Godfrey R., Glens Falls, Warren Co. Original.
Mathews, David, 107 E. 55th St., New York, New York Co.
*McClellan, Christopher R., 119 Pacific St., Brooklyn, Kings Co.
McCollom, William, 195 Lefferts Place, Brooklyn, Kings Co. Original.
McDonald, George E., Schenectady, Schenectady Co. Original.
McDougall, William D., Spencerport, Monroe Co.
McEwen, Robert C., Saratoga Springs, Saratoga Co. Founder.
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Porter, Harry N., New York Mills, Oneida Co. Founder.
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Preston, John R., Schuylerville, Saratoga Co. Original.
Preston, B. I., 31 Chestnut St., Rochester, Monroe Co.
Price, John H., 523 Union St., Elmira, Chemung Co. Original.
Pryer, William C., New Rochelle, Westchester Co. Founder.
Pultz, Monroe T., Stanfordville, Dutchess Co. Founder.
Purple, Samuel S., 36 W. 22d St., New York, New York Co. Founder.
Putnam, Frederick W., Binghamton, Broome Co. Founder.
Putnam, James W., 130 Pearl St., Buffalo, Erie Co. Original.
Quin, Hamilton S., 171 Genesee St., Utica, Oneida Co.
Race, W. F., Binghamton, Broome Co. Original.
Rae, Robert, Portageville, Wyoming Co. Original.
Rand, Hannibal W., Keene, Essex Co. Original.
Ransom, H. B., 9 W. 28th St., New York, New York Co.
Rave, Edward G., Hicksville, Queens Co. Original.
Read, Ira B., 18 E. 126th St., New York, New York Co.
Reagles, James, Schenectady, Schenectady Co. Original.
Reid, Christopher C., Rome, Oneida Co.
Reynolds, R. C., Pittsford, Monroe Co. Founder.
Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.
Rhodes, S. D., Seneca Falls, Seneca Co. Original.
Rice, Isaac, Bloomingdale, Essex Co. Original.
Richards, Charles B., Binghamton, Broome Co. Founder.
Ricketts, Benjamin M., 146 E. 36th St., New York, New York Co. Original.
Riley, Andrew W., Au Sable Forks, Clinton Co. Original.
Ring, William, 364 Niagara St., Buffalo, Erie Co. Founder.
Risch, Henry F., 212 17th St., Brooklyn, Kings Co.
Robb, William H., Amsterdam, Montgomery Co. Founder.
Roberts, John L. D., New York Mills, Oneida Co.
Robinson, Ezra A., Jay, Essex Co. Original.
Robinson, Joseph W., Hornellsville, Steuben Co.
Rochester, Thomas F., 216 Franklin St., Buffalo, Erie Co. Founder.

Rochester, Thomas M., 2 St. James Place, Brooklyn, Kings Co.
Rogers, H. Raymond, Dunkirk, Chautauqua Co.
Rogers, S. Frank, 123 Vail Ave., Troy, Rensselaer Co. Original.
Roper, P. B., Alpine, Schuyler Co.
Ross, Frank W., 251 Baldwin St., Elmira, Chemung Co. Original.
Roth, Julius A., 308 E. 79th St., New York, New York Co.
Rousseau, Zotique, 99 2d St., Troy, Rensselaer Co. Founder.
Rudgers, Denton W., Perry, Wyoming Co.
Ruggles, Augustus D., 93 Clinton Place, New York, New York Co.
Rulison, Elbert T., Amsterdam, Montgomery Co. Original.
Rushmore, John D., 129 Montague St., Brooklyn, Kings Co. Founder.
Russell, Charles P., 198 Genesee St., Utica, Oneida Co.
Russell, William G., 165 S. 9th St., Brooklyn, E. D., Kings Co. Original.
Sabin, Robert H., 245 Broadway, West Troy, Albany Co. Founder.
Sabin, William B., 245 Broadway, West Troy, Albany Co. Founder.
Sabine, Gustavus A., 8 E. 24th St., New York, New York Co. Original.
Sanders, E., 206 E. 79th St., New York, New York Co.
Sawyer, Conant, Au Sable Forks, Essex Co. Founder.
Saxer, Leonard A., N. Salina and Union Sts., Syracuse, Onondaga Co. Original.
Sayers, Alexander, Marion, Wayne Co. Original.
Sayre, Lewis A., 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Lewis Hall, 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Reginald H., Bellevue Hospital, New York, New York Co.
Schmid, H. Ernest, White Plains, Westchester Co. Original.
Schoonmaker, E. J., Magee's Corners, Seneca Co. Founder.
Segur, Avery, 281 Henry St., Brooklyn, Kings Co. Founder.
Selden, O. G., Catskill, Greene Co. Original.
Selden, Robert, Catskill, Greene Co. Original.
Seaman, Frank G., Seneca Falls, Seneca Co.
Seymour, W. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.
Sharer, John P., Little Falls, Herkimer Co. Original.
Shepard, A. Warner, 126 Willoughby St., Brooklyn, Kings Co. Original.
Sherer, John D., Waterford, Saratoga Co. Original.
Shrady, John, 66 W. 126th St., New York, New York Co.
Simmons, E. W., Canandaigua, Ontario Co. Founder.
Simons, Frank E., Canajoharie, Montgomery Co.
Sizer, Nelson Buell de S., 336 Greene Ave., Brooklyn, Kings Co. Original.
Skiff, George V., 1734 Broadway, New York, New York Co. Original.
Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original.
* Slack, Henry, Fishkill-on-Hudson, Dutchess Co. Founder.
Smeallie, James A., Canajoharie, Montgomery Co.
Smelzer, Baxter T., Havana, Schuyler Co.

* Deceased.

Smith, David M., Penn Yan, Yates Co.
Smith, George C., Delhi, Delaware Co.
Smith, H. Lyle, Hudson, Columbia Co. Original.
Smith, J. Lewis, 64 W. 56th St., New York, New York Co. Original.
Smith, Joseph T., Canandaigua, Ontario Co. Founder.
Smith, Marcellus R., Cincinnatus, Cortland Co. Original.
Smith, Samuel L., Smithville, Chenango Co.
Smith, Samuel W., 40 W. 25th St., New York, New York Co. Original.
Smith, Stephen, 574 Madison Ave., New York, New York Co. Original.
Smyth, Arthur V. H., Minaville, Montgomery Co.
Snook, George, Parma, Monroe Co.
Southworth, Malek A., Little Falls, Herkimer Co. Original.
Southworth, Richmond Joseph, Yonkers, Westchester Co. Original.
Spicer, Walter E., Holland Patent, Oneida Co.
Sprague, John A., Williamson, Wayne Co. Original.
Sprague, L. S., Williamson, Wayne Co.
Sprague, William B., Pavilion, Genesee Co. Founder.
Squibb, Edward H., 148 Columbia Heights, Brooklyn, Kings Co. Founder.
Squibb, Edward R., 152 Columbia Heights, Brooklyn, Kings Co. Founder.
Squire, Charles L., 409 E. Church St., Elmira, Chemung Co.
Steinführer, Gustavus A. F., Schenectady, Schenectady Co.
Steinke, Carl Otho Hermann, 220 17th St., Brooklyn, Kings Co. Original.
Stephenson, F. Halleck, 101 Warren St., Syracuse, Onondaga Co.
Stephenson, James A., Scio, Alleghany Co. Original.
Stevenson, William G., Nyack, Rockland Co.
Stockton, Charles G., 371 Porter Ave., Buffalo, Erie Co.
Strong, Orville C., Colden, Erie Co.
Strong, Thomas D., Westfield, Chautauqua Co. Founder.
Stubbs, Roland H., Waterford, Saratoga Co. Original.
Sullivan, John D., 9 Decatur St., Brooklyn, Kings Co.
Sutton, George Samuel, East Fishkill, Dutchess Co. Original.
Sutton, H. C., Rome, Oneida Co.
Sutton, Richard E., Rome, Oneida Co.
Swartwout, Leander, Prospect, Oneida Co.
Sweet, Joseph, Unadilla, Otsego Co. Original.
Taylor, Isaac E., 7 E. 36th St., New York, New York Co. Founder.
Taylor, John H., Holley, Orleans Co. Original.
Tefft, Charles B., 8 Henry St., Utica, Oneida Co.
Thayer, William Henry, 171 Livingston St., Brooklyn, Kings Co. Original.
Thomas, T. Gaillard, 600 Madison Ave., New York, New York Co. Founder.
Thornton, William H., 574 Niagara St., Buffalo, Erie Co.
Todd, John B., Parish, Oswego Co.
Tompkins, H. C., Knowlesville, Orleans Co. Founder.
Tompkins, Orren A., East Randolph, Cattaraugus Co. Original.

Townsend, Morris W., Bergen, Genesee Co. Founder.
Traver, Richard D., 8 Waverly Pl., Troy, Rensselaer Co. Original.
Travis, Edward M., Masonville, Delaware Co.
Tremaine, Wm. S., 449 Washington St., Buffalo, Erie Co. Founder.
Tripp, John D., Virgil, Cortland Co. Original.
Trull, H. P., Williamsville, Erie Co.
Tucker, Carlos P., 43 W. 26th St., New York, New York Co. Founder.
Tully, A. Melville, Oswego, Oswego Co. Original.
Turner, Melvin H., Hammondsville, Essex Co. Original.
Ure, Heman D., Wampsville, Madison Co.
Van de Warker, Ely, 45 Montgomery St., Syracuse, Onondaga Co. Founder.
Vanderhoof, Frederick D., Phelps, Ontario Co. Original.
Van Fleet, Frank, 146 E. 81st St., New York, New York Co.
Van Hoevenberg, Henry, Kingston, Ulster Co. Original.
Van Vranken, Adam T., 74 Ohio St., West Troy, Albany Co. Original.
Van Wyck, Richard C., Hopewell Junction, Dutchess Co. Original.
Van Zandt, Henry C., Schenectady, Schenectady Co. Original.
Vaughn, Frank O., 249 Swan St., Buffalo, Erie Co. Original.
Vincent, Ludger C., 52 W. 26th St., New York, New York Co.
Wagner, Charles Gray, State Lunatic Asylum, Utica, Oneida Co.
Wakely, Benjamin C., Angelica, Alleghany Co. Original.
Wales, Theron A., Elmira, Chemung Co. Original.
Wallace, Edwin E., Jasper, Steuben Co.
Wallach, Joseph G , 159 E. 62d St., New York, New York Co. Original.
Walser, Wm. C., Port Richmond. Richmond Co.
Walsh, Simon J., 22 City Hall Place, New York, New York Co.
Ward, Charles S., 18 W. 30th St., New York, New York Co. Founder.
Ward, R. H., 53 4th St., Troy, Rensselaer Co.
Ward, Stanley M., Ellenville, Ulster Co. Original.
Warner, John W., 107 E. 72d St., New York, New York Co.
Webb, Edwin, Hempstead, Queens Co. Original.
Wells, E H., Binghamton, Broome Co.
Wells, William L., New Rochelle, Westchester Co. Original.
West, Joseph E., 171 Genesee St., Utica, Oneida Co.
West, M. Calvin. Rome, Oneida Co.
Wheeler, Isaac G., Marilla, Erie Co.
White, Whitman V., 1522 Park Ave., New York, New York Co. Founder.
White, William T., 130 E. 30th St., New York, New York Co. Founder.
Whitford, James, Onondaga Valley, Onondaga Co. Original.
Wieber, George, 181 S 5th St., Brooklyn, Kings Co. Original.
Wiener, Joseph, 806 Lexington Ave., New York, New York Co. Founder.
Williams, William H., 207 17th St., Brooklyn, Kings Co. Original.
Wilson, Thomas, Claverack, Columbia Co. Founder.
Winship, Charles A., Eagle Mills, Rensselaer Co. Original.

Wood, Charles S., 171 W. 47th St., New York, New York Co. Founder.
Woodend, William D., Huntington, Suffolk Co. Founder.
Woodward, C. H., Batavia, Genesee Co.
Wyckoff, Cornelius C., 482 Delaware St., Buffalo, Erie Co. Founder.
Wyckoff, Richard M., 532 Clinton Ave., Brooklyn, Kings Co. Founder.
Wyeth, John A., 267 Madison Ave., New York, New York Co. Original.
Young, Augustus A., Newark, Wayne Co. Original.
Young, John, Fishkill-on-Hudson, Dutchess Co. Original.
Young, John D., Starkville, Herkimer Co. Original.
Young, Oscar H., Sidney Centre, Delaware Co. Original.
Young, William, Cold Spring, Putnam Co. Founder.

Total, 643.

Of 164 Founders, 144 remain on the list; of 286 Original Fellows, 274 remain on the list.

ADDENDUM.

On page 8, line 3, insert the name of B. J. PRESTON, M. D., Rochester, as member of the Executive Committee of the Fourth Branch.

INDEX.

Address on medical jurisprudence, Dr. S. T. Clark, 172.
of the President for 1886, Dr. E. M. Moore, 18.
of welcome, Dr. J. W. S. Gouley, 15.
Alphabetical list of Fellows, 580.
American Institute Fair, invitation to attend, 430.
Andrews, J. B., cases of morphia and cocaine habit, 68.
memoir of John P. Gray, M. D., LL. D., 526.
Ankle, dislocations of, Dr. C. W. Brown, 188.
remarks on, Dr. Chapman, 201.
remarks on, Dr. Hyde, 199.
remarks on, Dr. Lynde, 200.
remarks on, Dr. Moore, 198.

Bacilli of tubercle, invasion by, 273, 280.
Bennett, T. W., memoir of Dr. Isaac Purdy, 530.
Biggs, H. M., tubercular infection, 273.
Bladder, sacculation and perforation of, Dr. J. W. S. Gouley, 340.
Bleeding in eclampsia, 392, 421.
Blumer, G. A., insanity from puerperal convulsions, 415.
Bontecou, R. B., fracture of neck, 317.
Branch Associations, officers of, 6.
reports of, 434, 436, 439, 442, 446.
Brown, C. W., dislocations of ankle, 188.
memoir of Dr. Patrick Henry Flood, 539.
Bryant, J. D., diagnostic signs in shot wounds of intestines, 105.
Bull, W. T., laparatomy in shot wounds of intestines, 117.
By-laws, 548.

Carroll, A. L., recovery *vs.* cure, 41.
Cervical vertebræ, fracture of, 317.
Chapman, J., remarks on dislocation of ankle, 201.
Chloral hydrate in eclampsia, 362, 388.
Chlorides in erysipelas, 61.
Chronic retention of urine, Dr. J. W. S. Gouley, 340.
Clark, S. T., address on medical jurisprudence, 172.
remarks on malaria, 338.
Cocaine and morphia habit, Dr. J. B. Andrews, 68.
Codding, G. H., memoir of Dr. Desault Guernsey, 532.
Collins, Isaac G., memoir of, 538.
Colvin, D., therapeutic agents in eclampsia, 392.
Commercial prescriptions, Dr. H. C. Van Zandt, 202.
Committee of Arrangements for 1885–'86, 3.
report of, 15.
for 1886–'87, 507.
on nominations, 427.
on publications, 507.
on scientific contributions, 427.
Congenital occlusion of posterior nares, Dr. A. A. Hubbell, 244.
Constitution, 545.
Consumption, see pulmonary tuberculosis, 257.
Convulsions, puerperal, in ætiology of insanity, 399, 415.
Cotton batting in erysipelas, 62.
Council, annual report of, 502.
for 1885–'86, 1.
for 1886–'87, 4, 432.
minutes of session held June 22, 1886, 502.
minutes of session held Nov. 10, 1886, 504.
minutes of session held Nov. 17, 1886, 506.

Council, minutes of session held Nov. 18,1886, 506.
resolution in memory of Dr. John P. Gray, 525.
Cranberry-poultice in erysipelas, 63.
Cronyn, J., inheritance of predisposition to tuberculosis, 270.
remarks on treatment of erysipelas, 62.
remarks on diphtheria, 336.

Delegates from other organizations in attendance at third annual meeting, 14.
Dennis, F. S., technique of laparotomy in shot wounds of intestines, 138.
Diagnostic signs of involvement of intestines in shot wounds of abdomen, 95, 105, 135, 148, 160.
Didama, H. D., pulmonary tuberculosis, 257.
memoir of Dr. Austin Flint, 428.
remarks on eclampsia, 420.
remarks on malaria, 338.
Diphtheria, local applications in, 337.
Discussion on eclampsia, 354.
on pulmonary tuberculosis, 257.
on shot wounds of intestines, 93.
Dislocations of ankle, Dr. C. W. Brown, 188.
District Branch, first report of, 434.
second report of, 436.
third report of, 439.
fourth report of, 442.
fifth report of, 446.

Eclampsia, Dr. G. A. Blumer, 415,
Dr. D. Colvin, 392.
Dr. G. T. Harrison, 387.
Dr. B. L. Hovey, 419.
Dr. W. T. Lusk, 354.
Dr. J. R. MacGregor, 399.
Dr. I. E. Taylor, 370.
Dr. T. G. Thomas, 382.
Dr. J. Tyson, 364.
renal complications in, 355, 364, 382.
Elsner, H. L., predisposing influences in tuberculosis, 280.
Erysipelas, is it ever a strictly local disease? Dr. F. Hyde, 49.
chlorides in, 61.
local applications in, 61, 62.
Erysipelas, pathology of, 50, 61.
Ether in eclampsia, 424.

Fellows, alphabetical list of, 580.
in attendance at third annual meeting, 9.
list of, by county and district, 560.
Ferguson, E. D., on nephrectomy, 234.
remarks on eclampsia, 422.
remarks on erysipelas, 61.
Fever epidemic in Kingston, a review of, Dr. H. Van Hoevenberg, 320.
Finder, W., peculiar foreign body in stomach, 64.
Flint, Austin, memoir of, 428.
memorial meeting, 462.
portrait of, frontispiece.
Flint, W. H., memoir of Dr. Gaspar Griswold, 541.
prophylaxis of tuberculosis, 292.
Flood, Patrick Henry, memoir of, 539.
Foreign body in stomach, Dr. W. Finder, 64.
Fracture of the neck, Dr. R. B. Bontecou, 317.

Garrish, J. P., invitation to fair of American Institute, 430.
remarks on eclampsia, 421.
Gouley, J. W. S., address of welcome, 15.
remarks on erysipelas, 61.
report of Library Committee, 508.
sacculation and perforation of bladder, 340.
Gray, John P., memoir of, 526.
resolution of Council in memory of, 525.
portrait of, facing 525.
Green, Caleb, remarks on malaria, 338.
Griswold, Gaspar, memoir of, 541.
Guernsey, Desault, memoir of, 532.

Hair, concretions of, in stomach, 64.
Hamill, E. H., remarks on periodicity, 337.
Hamilton, Frank H., eulogy on, 509.
memoirs of, 429, 523.
portrait of, facing 509.

Hamilton, J. B., technique of laparotomy in shot wounds of intestines, 148.
Hannan, J. C., a remarkable case of obscure toxæmia, 328.
Harrison, G. T., therapeutic agents in eclampsia, 387.
Hovey, B. L., intestinal obstructions, 209.
remarks on eclampsia, 419.
Hubbell, Alvin A., congenital occlusion of posterior nares, 244.
Husted, N. C., memoir of Dr. Isaac G. Collins, 537.
Hutchinson, J. C., memoir of Dr. Frank H. Hamilton, 523.
Hyde, F., is erysipelas ever a strictly local disease? 49.
remarks on dislocation of ankle, 199.

Intestinal obstructions, Dr. B. L. Hovey, 209.
Intestines, shot wounds of, Dr. J. D. Bryant, 105.
Dr. W. T. Bull, 117.
Dr. F. S. Dennis, 138.
Dr. J. B. Hamilton, 148.
Dr. E. M. Moore, Jr., 112.
Dr. C. B. Nancrede, 130, 154.
Dr. C. T. Parkes, 159.
Dr. W. S. Tremaine, 90, 170.
Dr. T. R. Varick, 125.
symptoms of, 95, 105, 135, 148, 160.
Invited guests in attendance at third annual meeting, 14.
Iron, muriated tincture of, in erysipelas, 59, 61, 62.

Jacobson, N., naso-pharyngeal tumor of large size; removal after preliminary resection of superior maxilla, 219.
Jewett, H. O., memoir of Dr. John H. Knapp, 542.

Kingston, fever epidemic in, Dr. H. Van Hoevenberg, 320.
Knapp, John H., memoir of, 542.

Laparotomy in shot wounds of intestines, 94, 98.
after treatment, 103, 154, 170.
Laparotomy, contra indications, 124, 127, 135, 151, 165.
technique of, 102, 138, 151, 166.
Leale, C. A., eulogy on Dr. Frank H. Hamilton, 509.
report of New York County Medical Association, 457.
remarks on concretions in stomach, 67.
Library Committee, report of, 508.
List of Fellows, alphabetical, 580.
by district and county, 560.
Lloyd, T. M., remarks on eclampsia, 421.
Lusk, W. T., eclampsia, 354.
Lynde, U. C., remarks on dislocation of ankle, 200.

MacGregor, J. R., insanity from puerperal convulsions, 399.
Maxilla, superior, resection of, for removal of naso-pharyngeal tumor, 219.
McEwen, R. C., observations on the mineral waters of Saratoga, 33.
Medical jurisprudence, address on, Dr. S. T. Clark, 172.
Medicine and pharmacy abroad, Dr. E. R. Squibb, 78.
Meeting for 1887, time and place of, 4.
Memoir of Isaac Griffin Collins, 537.
Austin Flint, 428, 462.
Patrick Henry Flood, 539.
John Perdue Gray, 526.
Gaspar Griswold, 541.
Desault Guernsey, 532.
Frank Hastings Hamilton, 429, 523.
John H. Knapp, 542.
Isaac Purdy, 530.
Mineral waters of Saratoga, observations on, Dr. R. C. McEwen, 33.
Minutes of sessions of Council, 502.
Mitchell, H. E., modification of Politzer's air-bag, 207.
Moore, E. M., subluxation of radius from extension in young children, 18.
remarks on dislocation of ankle, 198.
remarks on fracture of cervical vertebræ, 318.

Moore, E. M., remarks on local applications in erysipelas, 62.
remarks on eclampsia, 423.
remarks on malaria, 335.
Moore, E. M., Jr., first measures of treatment in shot wounds of intestines, 112.
Morphia and cocaine habit, Dr. J. B. Andrews, 68.

Nancrede, C. B., laparotomy in shot wounds of intestines, 130, 154.
Narcotics in eclampsia, 387.
Nares, posterior, occlusion of, Dr. A. A. Hubbell, 244.
Naso-pharyngeal tumor, Dr. N. Jacobson, 219.
Neck, fracture of, Dr. R. B. Bontecou, 317,
Nephrectomy, Dr. E. D. Ferguson, 234.
New York County Medical Association, report of, 457.
Nitrate of silver in erysipelas, 62.

Obscure toxæmia, a case of, Dr. J. C. Hannan, 328.
Obstruction, intestinal, Dr. B. L. Hovey, 209.
Occlusion of posterior nares, Dr. A. A. Hubbell, 244.
Officers of branch associations, 6.
Officers and Council for 1885–'86, 1.
for 1886–'87, 4.
Orton, J. G., peculiarities in a case of ovariotomy, 324.

Parental faults and vices in ætiology of tuberculosis, 297.
Parkes, C. T., remarks on shot wounds of the intestines, 159.
Peculiarities in a case of ovariotomy, Dr. J. G. Orton, 324.
Plea for use of Sims's speculum by general practitioner, Dr. W. H. Robb, 238.
Posterior nares, congenital occlusion of, Dr. A. A. Hubbell, 244.
Preliminary resection of superior maxilla, for removal of naso-pharyngeal tumor, 219.
Premature labor as prophylactic of eclampsia, 370, 384.
President's annual address, Dr. E. M. Moore, 18.
Proceedings of third annual meeting, 426.
Proper attitude of therapeutics, Dr. C. G. Stockton, 309.
Puerperal convulsions in ætiology of insanity, 399, 415.
Pulmonary tuberculosis, Dr. H. M. Biggs, 273.
Dr. J. Cronyn, 270.
Dr. H. D. Didama, 257.
Dr. H. L. Elsner, 280.
Dr. W. H. Flint, 292.
Dr. J. Shrady, 298.
inheritance of, 258, 270.
infection of, 260, 273, 280.
prevention of, 264, 292.
treatment of, 298.
Purdy, Isaac, memoir of, 530.

Questions for discussion on eclampsia, 354, 364, 370, 399.
shot wounds of intestines, 93, 105, 112, 117, 151.
pulmonary tuberculosis, 257, 259, 260, 261, 262, 264, 266, 268, 270, 273, 280, 292, 298.

Radius, subluxation of, in young children, Dr. E. M. Moore, 18.
Recovery *vs.* cure, Dr. A. L. Carroll, 41.
Relations of physicians to their medical supplies, Dr. E. R. Squibb, 84.
Renal complications in eclampsia, 355, 364, 382.
Report of cases of morphia and cocaine habit, Dr. J. B. Andrews, 68.
of Committee of Arrangements, 15.
of Council, 502.
of Library Committee, 508.
of Committee on Publications, 505.
of First District Branch, 434.
of Second District Branch, 436.
of Third District Branch, 439.
of Fourth District Branch, 442.
of Fifth District Branch, 446.
of New York County Medical Association, 457.
of Treasurer, 431.
Resection of superior maxilla for removal of naso-pharyngeal tumor, 219.
Retention of urine, chronic, 340.

Robb, W. H., a plea for the use of Sims's speculum by the general practitioner, 238.

Sacculation and perforation of bladder as consequences of chronic retention of urine, Dr. J. W. S. Gouley, 340.
Saratoga, observations on the mineral waters of, Dr. R. C. McEwen, 33.
Shot wounds of intestines, see intestine, shot wounds of, 93.
Shrady, J., treatment of tuberculosis, 298.
Sims's speculum, use of, by general practitioner, Dr. W. H. Robb, 238.
Squibb, E. R., medicine and pharmacy abroad, 78.
relations of physicians to their medical supplies, 84.
remarks on veratrum viride in eclampsia, 421.
Stockton, C. G., proper attitude of therapeutics, 309.
Stomach, concretions in, 64.
Subluxation of radius from extension in young children, Dr. E. M. Moore, 18.

Taylor, I. E., induction of premature labor in eclampsia, 370.
Technique of laparotomy in shot wounds of intestines, 102, 138, 151, 166.
Therapeutics, proper attitude of, Dr. C. G. Stockton, 309.
Thomas, T. G., induction of premature labor in eclampsia, 382.
Treasurer, report of, 431.
Tremaine, W. S., shot wounds of the intestines, 93.
remarks on fracture of cervical vertebræ, 319.
Tuberculosis, see pulmonary tuberculosis, 257.
Tyson, J., renal complications in eclampsia, 364.

Uræmia in relation to eclampsia, 375.
Urine, chronic retention of, 340.

Van Hoevenberg, H., review of fever epidemic in Kingston, 320.
Van Zandt, H. C., commercial prescriptions, 202.
Varick, T. R., laparotomy in shot wounds of the intestines, 125.
Veratrum viride in eclampsia, 421, 422, 425.
Vertebræ, cervical, fracture of, 317.
Vinegar in erysipelas, 63.

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